



Aggregates, cement and ready-mix concrete market investigation

Final report

14 January 2014

Members of the Competition Commission who conducted this inquiry

Martin Cave (*Chairman of the Group*)

Roger Davis

Phil Evans

Professor Thomas Hoehn

Malcolm Nicholson

Chief Executive and Secretary of the Competition Commission

David Saunders

The Competition Commission has excluded from this published version of the final report information which the inquiry group considers should be excluded having regard to the three considerations set out in section 244 of the Enterprise Act 2002 (specified information: considerations relevant to disclosure). The omissions are indicated by [X]. Some numbers have been replaced by a range. These are shown in square brackets. Non-sensitive wording is also indicated in square brackets.

Contents

	<i>Page</i>
Summary	1
Findings	1-1
1. The reference and our statutory task	1-1
Background to the reference	1-2
The OFT's reference decision	1-2
European Commission investigation under Article 101 TFEU	1-3
Market developments	1-3
Conduct of the investigation	1-4
Structure of final report	1-5
2. Industry background	2-1
Introduction	2-1
Aggregates	2-1
Description of products	2-1
Demand for aggregates in GB	2-3
The planning regime for land-won primary aggregates	2-4
Marine aggregates and the licensing regimes for the dredging of marine aggregates	2-8
Secondary and recycled aggregates and the applicable planning regimes	2-9
The aggregates levy	2-9
Cement	2-10
Description of products	2-10
Cementitious products	2-12
Demand for cement in GB	2-14
EU Emissions Trading Scheme	2-14
The Carbon Reduction Commitment Energy Efficiency Scheme	2-17
UK Climate Change Agreements	2-18
Overlaps between CRC and CCAs	2-18
Climate Change Levy	2-19
RMX	2-19
Description of products	2-19
Demand for RMX in GB	2-19
Input relationships between aggregates, cement and RMX and extent of vertical integration	2-20
3. Construction materials companies	3-1
Introduction	3-1
The Majors	3-2
Aggregate Industries	3-2
Cemex	3-3
Hanson	3-6
Lafarge	3-8
Tarmac	3-9
Lafarge Tarmac	3-12
Hope Construction Materials	3-13
Medium-tier independents	3-14
Breedon Aggregates	3-16
Brett Group	3-16
CPV (Southern Cement and Dragon Alfa)	3-16
Dudman Group (prior to going into administration)	3-17
Leiths	3-17
Marshalls	3-17
Premier Cement	3-18
Sherburn	3-18
Thomas Armstrong	3-19

Titan	3-19
4. Framework for our competitive assessment	4-1
The Guidelines	4-1
Introduction	4-1
The market investigation regime	4-1
Features	4-2
The AEC assessment	4-3
Theories of harm	4-4
Unilateral market power	4-5
Coordination	4-6
Vertical integration and exclusionary behaviour	4-7
Aspects of policy and regulation have the effect of preventing, restricting or distorting competition.....	4-8
Effect of recent developments	4-9
5. Market definition	5-1
Introduction	5-1
Aggregates.....	5-2
Product market definition	5-2
Geographic scope of competition.....	5-9
Cement	5-9
Product market definition	5-10
Geographic scope of competition.....	5-12
GGBS	5-12
Product market definition	5-13
Geographic scope of competition.....	5-24
EC decision on the Heidelberg/Hanson merger	5-24
RMX.....	5-25
Product market definition	5-25
Geographic scope of competition.....	5-26
Summary of conclusions on market definition	5-26
6. Competitive assessment: aggregates.....	6-1
Introduction	6-1
Market structure	6-2
GB shares of supply.....	6-2
Catchment area analysis and market concentration at local level for aggregates.....	6-4
Characteristics of the product, customers and purchasing behaviour.....	6-6
Vertical integration from aggregates into downstream operations	6-10
Barriers to entry and expansion	6-10
Other aspects of market structure (eg structural links)	6-17
Market outcomes.....	6-17
Profitability	6-17
Margins.....	6-18
Price-concentration analysis and entry and exit analysis	6-20
Conduct.....	6-21
Aggregates case studies.....	6-21
Price announcement letters for aggregates.....	6-23
Effect of market developments	6-24
Our assessment	6-25
Unilateral market power	6-25
Coordination	6-27
Aggregates competitive assessment: conclusions	6-29
7. Cement: evidence and analysis.....	7-1
Cement: market structure	7-2
Market concentration	7-2
Shares of production capacity.....	7-5
Product and customer characteristics	7-6

Vertical integration	7-9
Barriers to entry and expansion into GB cement production.....	7-9
Cement imports	7-14
GGBS and PFA	7-27
Other aspects of cement market structure	7-27
Cement: market outcomes	7-29
Profitability	7-29
Margins.....	7-37
Pricing and price dispersion	7-39
Customer switching.....	7-41
Month-by-month changes in shares of sales	7-43
Cement: conduct.....	7-43
Price announcement letters	7-44
Price parallelism	7-49
Cross-sales.....	7-52
Analysis of internalization of cement purchases by Hanson in 2009	7-53
Cement: impact of recent market developments.....	7-57
GGBS supply chain	7-60
GGBS production process	7-60
Market shares and imports.....	7-61
Capacity for GGBS production	7-63
GGBS customers.....	7-68
GBS and GGBS profitability and GGBS prices and margins	7-68
Pricing of GGBS	7-70
Contractual arrangements for the supply of GBS and GGBS	7-71
Internal documentary evidence on GGBS	7-72
Summary.....	7-72
8. Cement: competitive assessment.....	8-1
The GB cement markets	8-1
Market outcomes	8-1
Possible explanations for market outcomes	8-4
The internal documentary evidence	8-10
The mechanism for coordination	8-45
Variation over time in the evidence base.....	8-72
Incentives to coordinate	8-76
Role of Lafarge (pre-2013).....	8-80
Roles of Hanson and Cemex	8-82
Role of Tarmac (pre-2013).....	8-83
Role of Aggregate Industries.....	8-84
Impact of recent market developments	8-86
Effects of coordination on competition	8-98
Quantification of the detriment arising from high cement prices	8-99
Cement competitive assessment: conclusions	8-101
Competitive assessment of the GGBS supply chain.....	8-104
Relevance of GGBS to our investigation	8-105
Effectiveness of competition in the GGBS supply chain	8-106
Structural links between GGBS and cement markets and impact on Hanson and Lafarge Tarmac's incentives in the GGBS market.....	8-110
GGBS supply chain competitive assessment: conclusions.....	8-115
Quantification of the detriment arising from high GGBS prices.....	8-117
Mechanism by which the GGBS-related AEC in the cement market leads to higher cement prices	8-118
9. Competitive assessment: RMX	9-1
Introduction	9-1
Market structure	9-1
Shares of supply at GB level.....	9-2

RMX customers and their purchasing behaviour.....	9-4
Entry and expansion	9-9
Market outcomes.....	9-11
Profitability	9-12
Margins.....	9-12
Market developments.....	9-13
Our assessment.....	9-14
Unilateral market power	9-14
Coordination	9-15
RMX competitive assessment: conclusions	9-16
10. Vertical integration and its effects on competition.....	10-1
Rationales for and efficiencies from vertical integration	10-1
Vertical integration and exclusionary behaviour.....	10-2
Overview of the conditions for foreclosure through the supply of cement: ability and incentives.....	10-3
Outcomes	10-5
Conclusions	10-7
11. Competitive effects of policy and regulation	11-1
Introduction	11-1
The planning regime.....	11-1
Land-won primary aggregates	11-1
Incentives to produce aggregates at sites where planning permission has been granted	11-3
The role of aggregates working parties	11-4
Conclusions on the planning regime for land-won aggregates	11-4
Marine, secondary and recycled aggregates.....	11-5
The aggregates levy.....	11-5
Conclusions on the aggregates levy	11-6
The EU Emissions Trading Scheme.....	11-6
Conclusions on the EU Emissions Trading Scheme.....	11-7
Carbon Reduction Commitment, Climate Change Agreements and the Climate Change Levy.....	11-8
Conclusions on the CRC.....	11-8
12. Findings	12-1
13. Remedies.....	13-1
Introduction	13-1
Framework for consideration of remedies.....	13-1
Remedy measures included in our package of remedies	13-2
Cement plant divestiture remedy.....	13-2
Cement market data remedy.....	13-34
Price announcement remedy	13-41
GGBS remedies.....	13-47
Remedy options not being taken forward	13-76
Assessment of relevant customer benefits	13-77
Framework for assessing RCBs.....	13-77
Our assessment and conclusions on RCBs	13-78
Effectiveness of our package of remedies	13-79
How the package of remedies addresses the AECs and/or customer detriment ..	13-79
Other aspects of the effectiveness of the package of remedies	13-83
Conclusions on the effectiveness of the package of remedies	13-89
Proportionality of our package of remedies	13-89
Broader considerations concerning the proportionality of our package of remedies.....	13-89
Detailed assessment of the proportionality of our package of remedies.....	13-92
Conclusions on the proportionality of the package of remedies.....	13-103
Decision on remedies.....	13-103

Appendices

- 1.1 Terms of reference and conduct of the investigation
- 2.1 Aggregates—policy and regulation
- 2.2 EU Emissions Trading Scheme
- 2.3 Internal sales and sourcing of cement and aggregates
- 3.1 Construction materials companies: further details
- 3.2 Timeline of the Majors (1990 to present)
- 4.1 Framework for the profitability assessment
- 4.2 Cost of capital
- 5.1 Market definition: further material on aggregates
- 5.2 Market definition: further material on RMX
- 5.3 Market definition: further material on GGBS
- 6.1 Aggregates catchment area analysis
- 6.2 Barriers to entry and expansion in the provision of aggregates
- 6.3 Analysis of the Majors' profitability in the supply of aggregates
- 6.4 Analysis of cost structures and profit margins: purpose, approach and methodology
- 6.5 Analysis of cost structures and profit margins: assessment covering the Majors' relevant GB operations
- 6.6 Analysis of cost structures and profit margins: assessment covering the medium-tier independents' relevant GB operations
- 6.7 Analysis of local competition in aggregates
- 6.8 Aggregates case study documents and telephone interviews
- 6.9 Price increase announcement letters in aggregates
- 7.1 Market shares and concentration measures in grey cement
- 7.2 Capacity in cement
- 7.3 Product and customer characteristics and available information—cement
- 7.4 Barriers to entry and expansion in the supply of cement
- 7.5 Cement imports
- 7.6 Supply of GGBS and PFA in GB
- 7.7 Analysis of the cement producers' profitability in the supply of cement
- 7.8 Cement pricing and price dispersion
- 7.9 Cement customer switching
- 7.10 Analysis of month-by-month changes in shares of sales of cement made by GB producers
- 7.11 Analysis of cement price announcements
- 7.12 Cement price parallelism
- 7.13 Cross-sales in bulk cement
- 7.14 Analysis of the internalization of cement purchases by Hanson in 2009
- 7.15 The impact of the JV and entry of Mittal
- 7.16 Analysis of Hanson's profitability in the supply of GGBS
- 7.17 Tarmac's profitability in the supply of GBS
- 8.1 Internal documentary evidence: methodology
- 8.2 2008 documents: chronology
- 8.3 2012 documents: Chronology—Cemex, Hanson and Lafarge
- 8.4 2012 documents: chronologies—Aggregate Industries and Tarmac
- 8.5 The role of vertical integration in facilitating coordination in the GB cement markets
- 8.6 Estimating the customer detriment arising from the AECs in cement
- 8.7 Estimate of the detriment in GGBS based on the GGBS profitability analysis
- 8.8 Effect of Hanson's participation in both cement and GGBS markets on GGBS pricing
- 9.1 Barriers to entry and expansion in the provision of RMX
- 9.2 Analysis of the Majors' profitability in the supply of RMX
- 10.1 Vertical effects: supporting material from internal documents and parties' submissions
- 11.1 Effects of policy and regulation on competition
- 11.2 Competition implications of planning policy regarding landbanks for aggregates
- 13.1 Summary of views on the Remedies Notice

- 13.2 Supporting analysis to cement plant divestiture remedy
- 13.3 General views on the effectiveness of a cement market remedy
- 13.4 Supporting materials to price announcement remedy
- 13.5 Supporting analysis to GGBS remedies
- 13.6 Our assessment of remedy options not being taken forward
- 13.7 Our assessment of relevant customer benefits
- 13.8 Interaction between our remedies and EU law
- 13.9 Costs of remedies
- 13.10 Analysis of the NPV of the net benefit of our remedies

Glossary

Summary

The reference

1. On 18 January 2012, the Office of Fair Trading (OFT) referred the supply or acquisition of aggregates, cement and ready-mix concrete (RMX) in Great Britain (GB) to the Competition Commission (CC) for investigation. The reference was made under sections 131 and 133 of the Enterprise Act 2002 (the Act).
2. We are required to decide whether ‘any feature, or combination of features, of each relevant market prevents, restricts or distorts competition in connection with the supply or acquisition of any goods or services in the United Kingdom or a part of the United Kingdom’.¹ If the CC decides that there is such a feature or combination of features, then there is an adverse effect on competition (AEC).² This report sets out our findings based on the evidence we have reviewed and the analysis we have carried out during the course of our inquiry.

Findings

3. We did not identify any features giving rise to an AEC in any market in GB for the supply of aggregates or RMX.
4. We found that there was a combination of structural and conduct features in the GB cement markets that gave rise to an AEC in those markets through coordination.
5. We also found that there were further features of the GB cement markets which combine to give rise to an AEC in the GB market for the supply of ground granulated blast furnace slag (GGBS—which can be used as a partial substitute for cement), as well as an additional AEC in the GB cement markets.
6. The likely effect of these features is higher prices of cement in GB than would otherwise be the case for all GB cement users, whether this cement is ultimately sold through independent RMX and concrete producers, independent merchants or through the downstream businesses of the five largest heavy building materials producers in GB (the Majors). In addition, the features giving rise to the AEC in the GGBS market are likely to result in higher prices for GGBS than would otherwise be the case.

The reference products

7. Aggregates are the granular base materials used in the construction of roads, buildings and other infrastructure. Aggregates may be divided into:
 - (a) primary aggregates, which are extracted from quarries, pits and (in the case of marine aggregates) the seabed;
 - (b) secondary aggregates, which are by-products of industrial and mining processes; and
 - (c) recycled aggregates, which are produced, for example, from demolition sites and construction waste.

¹ Section 134(1) of the Act.

² Section 134(2) of the Act.

8. Cement is the 'glue' that binds together the components of building materials. Among other uses, cement is mixed with aggregates and water to produce RMX and concrete products (for example, concrete blocks). Cement is made from a mixture of finely ground limestone or chalk (or other materials with a high calcium content), clay and sand (or other sources of silica and alumina), which is heated almost to melting point, creating an intermediate product, cement clinker. The finished cement is produced by grinding together cement clinker with additives to produce a fine powder. Cement is supplied in bulk or in bags.
9. Different types of cement are produced by blending ground clinker with other materials including GGBS and pulverized fly ash (PFA), a by-product of coal-fired power stations. We refer to these other materials collectively as 'cementitious products'. CEM I (containing less than 5 per cent additives) is the basic, and the most widely produced, cement in Great Britain. CEM II (typically made with PFA) and CEM III (made with GGBS) are the other two main types of cement supplied in the UK.
10. RMX is concrete that is produced in a freshly mixed and unhardened state. RMX is manufactured from cement, aggregates, water and other additives as necessary. RMX can be produced (a) in a fixed plant and distributed to site by a concrete mixer; (b) in a mobile plant at (or near) the customer site (also known as a 'site plant'); or (c) in a volumetric truck which carries the ingredients separately and mixes them on-site (also known as 'on-site batching'). In the UK, most RMX is mixed at a fixed plant then delivered to the customer's site.

Background to the reference

11. In recent years, there have been some significant developments in these markets, which we have taken into account in our investigation.
12. GB demand for aggregates, cement and RMX declined by about a third over the period 2007 to 2009, coinciding with the UK recession, and has still not recovered to its pre-recession levels.
13. On 10 December 2010, the European Commission Directorate General for Competition (DG COMP) announced that it had opened an investigation into suspected anticompetitive practices by several manufacturers of cement and related products in various European countries including the UK, involving possible infringements of Article 101(1) of the Treaty on the Functioning of the European Union (TFEU).³ The DG COMP investigation remained open during our market investigation. It has not prevented us conducting a full investigation of features which may adversely affect competition in the markets referred to us. The nature and purpose of our investigation are different from those of the investigation being carried out by DG COMP.
14. On 18 February 2011, Lafarge S.A. (Lafarge Group) and Anglo American plc (Anglo American) announced a proposed joint venture (JV) of their UK construction materials businesses (the Anglo–Lafarge JV), including their aggregates, cement, RMX, asphalt and contracting operations. Following the reference of this proposed JV to the CC by the OFT, the CC concluded in May 2012 that the proposed JV might be expected to result in a 'substantial lessening of competition' leading to prices that would be higher than might otherwise be the case in relation to various cement, aggregates and RMX markets in the UK.

³ http://europa.eu/rapid/press-release_IP-10-1696_en.htm?locale=en.

15. The CC therefore required Anglo American and Lafarge Group to divest various cement, aggregates, RMX and asphalt assets as a condition for allowing the Anglo–Lafarge JV to proceed. The majority of these divestitures were implemented in January 2013 when Anglo American and Lafarge Group sold a package of cement, RMX, aggregates and asphalt operations to Mittal Investments Sarl, thereby creating Hope Construction Materials (HCM). On the same day, Anglo American and Lafarge Group completed their JV, creating a new entity called Lafarge Tarmac.

The Majors and vertical integration

16. In this report, we use the term ‘the Majors’ to refer to the five largest heavy building materials producers in GB. Before 2013, these companies were (in alphabetical order): Aggregate Industries UK Limited (Aggregate Industries), Cemex UK Operations Limited (Cemex), the UK construction and building materials businesses of Hanson and HeidelbergCement AG (Hanson), Lafarge Aggregates Limited and Lafarge Cement UK Limited (together Lafarge) and the UK and international operations of Anglo American’s construction and building materials arm (Tarmac). After January 2013, these companies are (in alphabetical order): Aggregate Industries, Cemex, Hanson, HCM and Lafarge Tarmac. There are also a number of what we term ‘medium-tier independents’ which produce aggregates and/or RMX in GB, or import cement.
17. All the Majors with the exception of HCM have significant aggregates operations in GB. All the Majors with the exception of Aggregate Industries produce cement in GB, and there are no other cement producers in GB. All the Majors have significant RMX operations in GB.
18. There is considerable vertical integration in the industry, and this has increased over recent years. Significant proportions of the cement and aggregates produced by each Major are used in its own downstream operations. However, each Major’s downstream operations are not completely self-supplied: cement and aggregates are also purchased externally.

Market definition

19. In defining the economic markets in which to undertake our competitive assessment, we focused on the extent of substitution between different products and how this might vary by customer, location or application.
20. We concluded that the appropriate market definitions for the purposes of our investigation were:
 - (a) A single product market for all construction aggregates,⁴ including crushed rock and sand and gravel aggregates as well as recycled and secondary aggregates (although the extent of substitutability of recycled and secondary aggregates for primary aggregates varied significantly by application). We found that the

⁴ As well as construction aggregates, there are specialist aggregates used for certain specialist applications (for example, high purity limestone used for its chemical characteristics). We received limited specific submissions regarding competition issues in the markets for specialist aggregates and we did not become aware of any widespread concerns about specialist aggregates during the course of our investigation. While we did not find evidence in this market investigation of features giving rise to an AEC in any such market, we make no finding as to whether or not there are competition problems in particular specialist aggregates markets.

geographic scope of aggregates markets was local in nature, with the precise geographic specification varying according to a variety of local factors.⁵

- (b) A single product market for bulk grey cement including different types of cement (ie CEM I, CEM II, CEM III etc) and imported and GB-produced cement. In terms of geographic scope, we focused primarily on competition at a GB level, taking into account the constraints from imported cement as part of our competitive assessment. We defined bagged cement as a separate product market due to the lack of demand-side substitutability between bulk and bagged cement.
- (c) A single product market for GGBS, including imported and GB-produced GGBS, with a geographic scope of GB, which is closely related to cement and PFA, given that GGBS is both a partial substitute for CEM I and PFA, as well as an input into the production of CEM III and downstream cement products.⁶
- (d) A single relevant product market including all specifications of RMX as well as RMX supplied from fixed plants and site plants and concrete supplied from volumetric trucks. We found that RMX markets were highly localized in nature, with narrow catchment areas within about 8 to 10 miles of RMX plants, albeit with some scope for variation in catchment area according to local factors and the means of distribution (since RMX is a perishable product and can only be transported for a limited time after it has been mixed).

Theories of harm

21. We investigated different ways in which competition could be harmed (also known as 'theories of harm') in relation to each of the relevant markets and used these to structure our investigation:

- (a) *Unilateral market power.* Individual suppliers may have market power within relevant markets as a result of market concentration and barriers to entry. Such suppliers would have the ability to set higher prices than would otherwise be the case, or reduce the quality of other aspects of their offer, as a result of limited competition from other suppliers, and limited threat of entry or expansion into the market by other suppliers. We included within our consideration of this theory of harm the effect on competition in the market for the supply of GGBS in GB, given that it is both an input into the production of blended cement and a partial substitute for CEM I.
- (b) *Coordination.* Coordination between suppliers may distort or restrict competition. Coordination arises when, as a result of repeated interaction with rivals, suppliers in the market opt for a strategy of avoiding or limiting competition between them because they are aware and take into account that competition with rivals (for example, to undercut their prices in order to win more business) will lead to competitive responses by rivals, with the result that their profits will ultimately be lower than if they avoided or limited competition. The result of coordinated behaviour is that prices are higher (or the quality aspects of firms' offers are lower) than would otherwise be the case.

⁵ We analysed catchment areas for aggregates in our competitive assessment of aggregates markets.

⁶ Hanson is the sole producer of GGBS in GB, and Lafarge Tarmac is the sole producer of granulated blast furnace slag (GBS—the key raw material input into the production of GGBS) in GB. Both Lafarge Tarmac and Hanson are also significant producers in the GB cement markets. We therefore considered that the sole production by these parties of GBS and GGBS in GB respectively warranted consideration, and we therefore analysed the appropriate market definition for GGBS for the purposes of this market investigation.

- (c) *Vertical integration and exclusionary behaviour.* We examined several different hypotheses under this heading. One is that vertical integration itself affects suppliers' costs so that non-integrated suppliers are unlikely to be able to compete effectively with integrated suppliers. Another hypothesis is that one integrated supplier (acting unilaterally) is raising the price of cement (and/or aggregates) relative to the prices of RMX, with the effect of squeezing the margins of non-integrated RMX suppliers, such that non-integrated suppliers are weakened or excluded from the market. A variant on this hypothesis is that several integrated suppliers (acting collectively) are squeezing the margins of non-integrated RMX suppliers.
- (d) Aspects of policy and regulation may have the effect of preventing, restricting or distorting competition.

Aggregates

22. As geographic markets for construction aggregates are local, the ability of firms to exercise unilateral market power or to coordinate is likely to vary depending on the competitive conditions in different local areas, for example the level of concentration. Therefore, much of our competitive assessment of GB aggregates markets focused on understanding the geographical scope of local aggregates markets, the identity of suppliers and level of concentration in these markets, and on comparing outcomes across local markets to analyse whether there were any widespread features of the GB aggregates markets that gave rise to one or more AECs through the exercise of unilateral market power or coordination.
23. In undertaking our competitive assessment of construction aggregates markets in GB, we examined aspects of market structure, market outcomes and conduct, as well as analysing the impact of recent market developments. While we noted that the Majors collectively supplied the majority of construction aggregates in GB, we also found that in 2011 there were over 200 non-Major aggregates suppliers in GB.
24. In relation to unilateral market power in GB construction aggregates markets, our analysis indicated that:
- (a) There were significant barriers to entry into local aggregates markets through the supply of primary aggregates due (in the case of land-won primary aggregates) to the time required to identify and acquire a suitable site and to obtain planning permission and (in the case of marine aggregates) to licensing requirements. However, we found that there were fewer barriers to the expansion of existing aggregates operations, and to entry through the supply of recycled and secondary aggregates.
- (b) Most customers had a choice of several different aggregates suppliers, and the extent of high concentration in local markets was limited.
- (c) According to our price-concentration analysis (PCA)⁷ and entry and exit analysis⁸ (E&EA), when customers had a wider choice of aggregates supplier (including suppliers of recycled aggregates), this did not clearly lead to lower prices. However, we noted that our PCA and E&EA produced average results across GB, and might hide local or regional variability in competitive constraints.

⁷ PCA uses econometric techniques to examine the relationship (if any) between the price for a good in an area and the strength of competition to supply that good in that area.

⁸ An E&EA uses econometric techniques to examine how prices may change with the entry or exit of a competitor in a local area.

- (d) The Majors' returns on capital employed (ROCE) in their aggregates operations had been low to modest over the last five years (albeit on a GB-wide basis), with the exception of one company which appeared to have had significantly higher returns than the others.
- (e) For each Major, aggregates margins (at divisional level) had been gradually falling over the period 2007 to 2011—with price increases being outpaced by growth in variable costs. Our analysis of the medium-tier non-Major aggregates producers showed volatility and significant variation in margin levels over the period 2007 to 2011.
25. We carried out telephone interviews of aggregates customers and non-Major aggregates suppliers that were active in two case study areas of GB: South Wales and the west of East Anglia. We also carried out a review of documents that we obtained from the Majors in relation to their operations in these areas. These two case study areas were both characterized by relatively high levels of concentration in terms of shares of supply by the Major aggregate producers. The case study interviews suggested that the presence of independent aggregates producers generated downward pricing pressure and that consolidation of aggregates producers had diminished this local competition. However, taken as a whole, the case study documents and the case study interviews did not appear to suggest that unilateral market power was a problem in either of the two case study areas.
26. We noted that there were some aspects of the supply of construction aggregates in GB that might make at least some local markets susceptible to coordination. These included the high market shares held by the Majors in some local markets, product homogeneity, barriers to entry into the production of primary aggregates, structural links between firms and price announcement behaviour (although any patterns in this behaviour were not clear).
27. However, we found that there were several factors that reduced our concern that coordination might be occurring in local aggregates markets. These factors were:
- (a) geographical differentiation of aggregates products;
 - (b) wide variation in competitive conditions (eg the number and identity of suppliers) from one local area to another; and
 - (c) the Majors' relatively modest (in general) returns and falling margins on their aggregates operations.
28. The result of our aggregates case studies also reduced our concern that coordination might be occurring in the two areas which we assessed. Neither the document review for the case study areas nor our interviews with customers and non-Major suppliers suggested that coordination might be occurring in these local areas.
29. Overall, we did not find evidence indicating widespread competition problems across multiple local markets (whether as a result of unilateral market power or coordination). Our detailed analysis of the supply of aggregates in two areas of GB also did not find any evidence of competition problems with respect to these two areas. Given the lack of concerns raised by our analysis, both across multiple local markets and in the two specific areas we assessed, and given constraints on the time and resources available for our investigation overall, we did not carry out further analysis of individual local markets for aggregates. We have not identified any features giving rise to an AEC in any market in GB for the supply of construction aggregates through unilateral market power or coordination.

30. We considered that recent market developments, including the formation of Lafarge Tarmac and HCM, did not have a material impact on our competitive assessment of GB aggregates markets. Although Lafarge Tarmac is now, by some margin, the largest producer of aggregates in GB, these market developments have only very slightly increased the number of local aggregates markets with a high degree of concentration.

Cement

31. In undertaking our competitive assessment of the GB cement markets, we examined aspects of market structure, market outcomes and conduct in the cement markets as well as analysing the impact of recent market developments.
32. Evidence on market outcomes indicated that competition in the GB cement markets was not working effectively. This evidence included:
 - (a) Profitability assessed on a comprehensive basis after impairment losses (the measure we consider to most closely reflect the firms' economic profitability) exceeded the cost of capital averaged over the six-year period of review, despite the demand slump during this period and the fact that this period did not cover the whole of a business cycle.
 - (b) Variable profit margins (and, for three out of four producers, EBITDA margins) remained stable, or even in some cases increased, between 2007 and 2011, despite a 36 per cent drop in the demand for cement between 2007 and 2009 and increasing costs. Although 2012 variable profit and EBITDA margins fell on 2011 levels, they had returned to, or were higher than, their respective levels in 2008, before the full impact of the market downturn was felt. In real terms, cement prices peaked in 2009, to then reduce between 2009 and 2012, but there was an overall increase in prices over the period 2007 to 2012.
 - (c) There had only been small changes in annual shares of sales (the most for any Major was four percentage points) over the period 2007 to 2012, despite the significant demand slump from 2007 to 2009.
33. In addition to this evidence on profitability, margins, prices and market shares, we also found that customers who did not switch between cement suppliers did not benefit from the relatively lower prices of those customers that did switch—in other words, there was price discrimination.
34. In a well-functioning market, faced with a demand slump, significant excess capacity and high fixed costs, we would expect that market participants would compete vigorously on price to maintain volumes, resulting in greater volatility in shares and significant erosion of margins with returns at or below the cost of capital (and not increasing beyond previous levels while adverse trading conditions continued).
35. To assist us in interpreting the results of our analysis on market outcomes, we assessed a large body of internal documentary evidence obtained from the Majors. We found that these documents provided direct evidence of coordination by Lafarge, Hanson and Cemex and/or a strategic approach by them to activity in the market that was aimed at coordinating to achieve market stability. The strength of the evidence in the internal documents varied over time. The more recent internal documents also provided evidence of examples of competition between GB producers.
36. We found that the GB cement markets were characterized by high concentration, a significant degree of transparency, frequent interactions between the main cement

producers and a lack of complexity in the competitive environment and the products. These factors, taken together, suggest that the GB cement producers have strong awareness of each other's actions and are able to anticipate each other's future actions, leading to strategic interdependence in the competitive behaviour of the cement suppliers and coordination between Cemex, Hanson and Lafarge (now Lafarge Tarmac). Additional factors that in our view increased the structural susceptibility of these markets to coordination included high barriers to entry, limits to the competitive constraint imposed by imported cement and vertical integration into downstream operations.

37. In relation to imported cement, we noted that, while importers had experienced some growth in their collective share between 2007 and 2012, their collective share of GB cement sales remained small at around 12.5 per cent and the total volumes imported had not increased over that period. In addition, much of the growth in share happened between 2008 and 2009 since when importers' collective share has remained stable. We found that, although there was evidence that the GB producers regarded imported cement as a competitive threat, the strength of the competitive constraint from imported cement was limited because:
- (a) the GB producers had a substantial short-run cost advantage over cement importers in competing for customers at the margins;
 - (b) the higher costs faced by cement importers created incentives for them to price their cement just below the price of GB-produced cement; and
 - (c) the GB producers considered, and in some cases took, specific steps to undermine the viability of imported cement, such as applying pressure to restrict cement supplies to independent importers, purchasing of import terminals and/or importers; leveraging of contacts with importers in other markets and targeting lower-priced cement selectively at customers of cement importers.
38. We found evidence that three GB cement producers (Cemex, Hanson and Lafarge) recognized the current (and past) structural susceptibility of the GB cement markets to coordination and took steps to exploit this susceptibility, using shares of sales as a focal point. This evidence included a strategic focus on maintaining market stability between the members of the coordinating group rather than independently pursuing unconstrained growth, manifested in a focus on maintaining existing (or returning to pre-existing) relative shares of sales; tit-for-tat used for share balancing; use of cross-sales as a mechanism for transparency, signalling and, on occasion, share balancing, price announcement behaviour (contributing to price parallelism and to softening of customer resistance to price increases); and targeting of importers beyond normal competition on price and service.
39. We concluded that, although the extent to which they were satisfied might vary over time, the conditions for coordination to be sustained were met in the GB cement markets (with shares of sales as the focal point) in relation to the ability to reach and monitor coordination, the existence of a mechanism for internal sustainability and the external sustainability of coordination.
40. We described a mechanism for coordination which was supported by the available evidence. There was some evidence that there were periods when coordination was more successful, and periods when it was less successful (for example, in 2009 following Hanson's large internalization of cement volumes).
41. We found that it was likely to be in the interests of Lafarge, Cemex and Hanson to adhere to the mechanism for coordination we described, whereas Tarmac was likely

to have been a fringe player. Furthermore, Lafarge's position as the largest cement producer, as well as the least vertically-integrated producer, was likely to give it strong incentives to take on more of the costs of coordination (including the costs of accommodating the growth in share of sales of fringe cement suppliers, ie Tarmac and cement importers). The different incentives of the GB producers (arising, for example, from differences in their size and in the extent to which they made external sales of cement) explained the different roles they adopted in the market, which in turn explained why shares of sales had not been perfectly stable despite the coordination which had been occurring in the market. The evidence showed that asymmetries in their shares of sales, capacity and degree of vertical integration did not prevent coordination in the GB cement markets.

42. In relation to recent market developments, our approach was to assess whether such developments were sufficient to displace our provisional conclusions on the existence of coordination in the GB cement markets. Our assessment was necessarily predictive as, given the statutory timetable for our investigation, we could not wait for events to unfold.
43. The most significant market developments were the exit of Tarmac (the smallest producer in GB with only a single plant which we found to be outside the coordinating group of firms without coordination breaking down as a result) as an independent competitor in early 2013 and the entry of HCM at the same time.
44. These market developments resulted in no change to (a) the number of participants in the GB cement markets; (b) the number of GB cement producers; or (c) total GB cement production capacity. Therefore despite some differences between HCM and Tarmac, we did not consider that these developments had changed substantially the structure of the GB cement markets. Further, the evidence and analysis available to us indicated that the structural susceptibility of these markets to coordination, and the behaviour of market participants seeking to exploit this susceptibility, had existed over a number of years, and had been resilient to similar or more significant changes to the market.
45. There was some evidence of the impact that HCM has had on the market to date, (for example, volumes lost to HCM by other cement suppliers and HCM's impact on pricing). However, we did not consider this evidence to be representative of the longer-term state of the market, given that HCM has had to build its customer and sales base up from its formation in January 2013.
46. For these reasons and taking into account the uncertainty regarding HCM's longer-term behaviour, we concluded that the formation of HCM was unlikely to be sufficiently market disrupting on its own (or in conjunction with the pre-existing competitive fringe and/or other recent market developments such as the formation of Lafarge Tarmac or the acquisition by CRH, a cement importer, of additional cement import terminals)—materially to reduce our concerns about coordination in the GB cement markets.
47. Similarly, we did not consider that a possible future recovery in demand was likely to undermine coordination in these markets.
48. We concluded that there was a combination of structural and conduct features in the GB bulk and bagged cement markets that gave rise to an AEC in those markets.
49. The structural features are:
 - (a) high market concentration;

- (b) transparency of sales and production shares, wins and losses and customer–supplier relationships;
 - (c) high barriers to entry (including limits to the constraint imposed by imported cement);
 - (d) homogeneity of product;
 - (e) customer characteristics and behaviour (in particular, regularity of purchases, purchases at fixed locations, concentration of customer base and single sourcing for a particular job site); and
 - (f) vertical integration from cement into downstream operations.
50. The conduct features, the individual significance of which varies over time, are:
- (a) a strategic focus on maintaining market stability between the members of the coordinating group, frequently manifested in a focus on maintaining existing (or returning to pre-existing) relative shares of sales;
 - (b) ‘tit-for-tat’ behaviour used to balance shares;
 - (c) price announcement behaviour (which facilitates price parallelism, and softens customer resistance to price increases);
 - (d) use of cross-sales as a mechanism for transparency, signalling and, on occasion, share balancing; and
 - (e) targeting of importers beyond normal competition on price and service.
51. These structural and conduct features combine together to give rise to an overarching feature in the GB cement markets, namely coordination among Cemex, Hanson and Lafarge (now Lafarge Tarmac).
52. We found that the likely effect of these features was higher prices of cement in GB than would otherwise be the case for all GB cement users, whether this cement was ultimately sold through independent RMX and concrete producers, independent merchants or through the downstream businesses of the Majors.

GGBS supply chain

53. As explained above, we considered that the sole production in GB by Lafarge Tarmac and Hanson of GBS and GGBS respectively warranted consideration during our market investigation.
54. We found that the GGBS supply chain has the following characteristics:
- (a) GGBS is both an input into the production of blended cements and a partial substitute for CEM I in the production of RMX and other downstream uses of cement.

- (b) The main participants in the GGBS supply chain in GB are Lafarge Tarmac⁹ and Hanson, each of which is also one of the top three GB cement producers.
- (c) Lafarge Tarmac's and Hanson's extensive participation in both the GB cement markets and the GGBS supply chain gives them incentives that would not otherwise exist to take into account the interaction between these products in a way which is liable to distort competition both in the GGBS market and in the cement market.
- (d) Lafarge Tarmac is the sole producer of GBS in GB having entered into and maintained its BFS agreements with the GB steel producers (thereby creating a strategic barrier to entry into GBS production in GB), and Hanson is the sole producer of GGBS in GB having entered into and maintained its GBS agreements with Lafarge Tarmac, giving Hanson exclusive rights to use all GBS produced in GB for the production of GGBS (thereby creating a strategic barrier to entry into GGBS production in GB). One consequence of the agreements is that Lafarge Tarmac owns all the plants used in GB for the production of GBS, and Hanson owns all the grinding plants used in GB for producing GGBS.
- (e) Imports of GGBS into GB are limited, with Hanson accounting for around 90 per cent of GGBS sales in GB in 2011.

55. In relation to competitive effects in the GGBS market, we found that:

- (a) While Hanson's profitability for the supply of GGBS reduced between 2007 and 2012, it has remained considerably in excess of our benchmark for the cost of capital for each year in the period 2007 to 2012.
- (b) Although prices of CEM I and PFA are likely to constrain prices of GGBS currently, this is because Hanson is the sole GB producer of GGBS and can therefore set GGBS prices at or just below levels at which customers would switch to alternatives; in other words, the cost of producing RMX (or other downstream concrete products) with CEM I and/or CEM I and PFA provides a 'price ceiling' for the inflated GGBS prices.
- (c) Prices and margins for GGBS were not substantially affected by the large reduction in GGBS demand, which suggests a degree of pricing power by Hanson.
- (d) The pricing policy of Hanson in relation to GGBS, whereby prices of GGBS to individual customers appear to be set mainly by reference to the maximum price that each customer is willing to pay (and therefore depending, among others, on the price of PFA and CEM I an individual customer is able to obtain), also suggests that Hanson has market power in the supply of GGBS and is able to price discriminate depending on the willingness to pay of different customers.

56. In relation to GBS, we found that:

- (a) Under the Lafarge Tarmac–Hanson GBS agreements (i) the price of GBS is currently set as a percentage of Hanson's selling price of GGBS, and (ii) Lafarge Tarmac has the obligation to supply Hanson with all the GBS it needs and can only supply any excess GBS to other end-users who do not intend to grind the

⁹ Blast furnace slag (BFS) is the main raw material input into the production of GBS, which in turn, as explained above, is the main raw material input into the production of GGBS. As a result of BFS supply agreements between Lafarge Tarmac and the GB steel producers, Lafarge Tarmac has exclusive rights to produce GBS from each of the three GB steel plants.

granulate in the UK for sale in the UK. Together this implies that, under the current agreements, Lafarge Tarmac has a restricted ability to influence the price of GBS and GGBS in GB.

- (b) Our analysis of the profitability of Lafarge Tarmac's GBS operations does not suggest that Lafarge Tarmac is earning excess profits in GBS (suggesting that Lafarge Tarmac is not benefiting directly, through its sales of GBS, from Hanson's ability to exercise market power in the GGBS market).
 - (c) However, Lafarge Tarmac benefits from higher GGBS prices (i) because the price it obtains for GBS from Hanson is proportional to the price of GGBS achieved by Hanson, and (ii) indirectly through its impact on prices in the cement market. Therefore, even if Lafarge Tarmac had the ability to do so, it would have limited incentives to seek to introduce more competition in relation to either GBS or GGBS.
57. Overall, this evidence leads us to the conclusion that Hanson has the ability to exercise significant market power in the supply of GGBS in GB.
58. Hanson's ability and incentive to exercise significant market power in the supply of GGBS in GB is likely to result in prices of GGBS in excess of what we would expect in a well-functioning market. Hanson's exercise of significant market power in the supply of GGBS is also likely to result in prices in the GB cement market higher than they would otherwise be. In addition, Hanson and Lafarge Tarmac are both active as two of the top three GB cement producers, which further contributes to their incentives to keep the exclusive agreements in place and to maintain high prices of GGBS, given the interrelationship between GGBS prices and cement prices.
59. We therefore concluded that the following features of the GB cement markets combine to give rise to an AEC in the market for the supply of GGBS in GB (the AEC in GGBS) as well as for the supply of cement in GB (the GGBS-related AEC in cement), resulting in higher prices for GGBS and for cement than might otherwise be the case:
- (a) The extensive participation of Lafarge Tarmac and Hanson in both the GGBS supply chain on the one hand, and the GB cement markets on the other, whereby Lafarge Tarmac and Hanson are two of the top three GB cement producers and between them own all of the GBS and GGBS plants in GB.
 - (b) Lafarge Tarmac's entering into and maintaining a series of exclusive long-term agreements with GB steel producers for the supply by the GB steel producers of all of their BFS, from which, when water-cooled, Lafarge Tarmac produces GBS.¹⁰
 - (c) Lafarge Tarmac's and Hanson's entering into and maintaining a series of exclusive long-term agreements with each other for the supply by Lafarge Tarmac to Hanson of all of the GBS produced in GB intended for cementitious use in GB, as a consequence of which Hanson is responsible for all GGBS production in GB.

¹⁰ The definition of a 'feature' of a market in [section 131\(2\)\(b\)](#) of the Act provides that any conduct (whether or not in the market concerned) of any participants in the market concerned can be considered to be a feature of that market. It follows that Lafarge Tarmac and Hanson's conduct in the GGBS supply chain can be regarded as a feature of a 'relevant market', within the meaning of [section 134\(3\)](#) of the Act, namely the markets in cement.

Detriment from AECs identified

60. We considered there to be material customer detriments arising from higher prices for cement and GGBS than might otherwise be the case as a result of the AECs we identified:
- (a) We estimated that the customer detriment associated with high cement prices was about £30 million a year on average for the period 2007 to 2012. However, we consider that this is likely to be an underestimate of the average annual detriment over a full business cycle.
 - (b) We estimated that the customer detriment associated with high GGBS prices was of the order of £15–£20 million a year on average for the period 2007 to 2012. We considered that this estimate was a reasonable approximation of the average annual detriment associated with high GGBS prices over a full business cycle.

RMX

61. In undertaking our competitive assessment of RMX markets in GB, we examined aspects of market structure, market outcomes and conduct, as well as analysing the impact of recent market developments.
62. Our analysis indicated that:
- (a) Whilst the Majors collectively supplied about two-thirds of RMX at GB level, the extent of concentration in local markets for RMX appeared to be limited.
 - (b) The customer base for RMX was relatively fragmented compared with cement and aggregates and RMX customers tended to purchase on a project basis.
 - (c) Whilst not all local RMX producers might be able to supply customers requiring very large volumes of RMX for a particular project, such customers were also likely to have some purchaser power, and had other options such as tendering for (or self-supply through) an RMX site plant. RMX suppliers might not have to be in the vicinity of such a project to bid for it.
 - (d) Barriers to entry and expansion were low.
 - (e) The generally large ROCEs in 2007 by the Majors in their RMX operations had deteriorated a great deal since then, and the Majors' RMX operations taken together had been loss-making from 2008 up to and including 2011.
 - (f) For each Major, RMX margins (at divisional level) had eroded over the period 2007 to 2011, and the mid-tier RMX producers had also faced margin erosion.
63. We therefore found that widespread unilateral market power in the GB RMX markets was unlikely. We found little evidence that competition for customers requiring very large volumes of RMX for particular projects would be less effective than competition for other customers.
64. The supply of RMX in GB appeared to have fewer structural features than in the case of aggregates or cement that might give rise to concerns about coordination. There was some evidence that the Majors collectively held a high market share in some local RMX markets. However, the lack of barriers to entry and expansion into RMX supply, the complexity of maintaining coordination in multiple local RMX markets, the declines in the profitability of the Majors' RMX operations since 2007, coupled with

the erosion of their margins (at divisional level), meant that we found that widespread coordination in the GB RMX markets was unlikely.

65. Overall, we did not find evidence indicating widespread problems across multiple local RMX markets (whether as a result of unilateral market power or coordination). Given the lack of concerns raised by our analysis and given constraints on the time and resources available for our investigation overall, we did not carry out further analysis of individual local markets for RMX. We have not identified any features giving rise to an AEC in any market in GB for the supply of RMX through unilateral market power or coordination.
66. We considered that recent market developments, including the formation of Lafarge Tarmac and HCM, did not have a material impact on our competitive assessment of the GB RMX markets. These developments had resulted in little overall consolidation in shares of supply of RMX at GB level and we had limited concerns about the impact of these market developments on concentration in local markets.

Vertical effects

67. We assessed whether vertical integration in aggregates, cement and RMX gave rise to one or more AECs through exclusionary behaviour towards rivals. Most exclusionary behaviour concerns expressed by parties related to the possibility of foreclosure¹¹ of the supply of cement (rather than aggregates) to rivals in GB RMX markets.
68. We found that the following evidence did not point in the direction of any widespread foreclosure:
 - (a) High-level evidence on RMX shares of supply: the collective share of supply of RMX in GB held by independent RMX producers had grown from 21 per cent in 2005 to 27 per cent in 2011 (with further growth in 2012).
 - (b) Entry and exit of independent RMX producers: although there had been some exit by independent RMX producers in the period between 2007 and 2010, the Majors had closed many more RMX sites than the independent RMX producers during that period. In addition, while there had been net exit by the Majors between 2007 and 2010, there had been a small net entry by independent RMX producers.
 - (c) RMX-related pricing behaviour of the Majors: there was evidence that the average price of cement paid by independent RMX producers had increased more than the average downstream price of RMX, suggesting that the margin available to RMX producers over cement costs was likely to have reduced between 2007 and 2011. However, the evidence on the internal pricing policies of the Majors (namely that they set relatively high internal transfer prices for aggregates to their internal RMX businesses) and on the prices at which the GB cement producers sold cement to each other (namely that, in many cases, GB cement producers tended to charge each other higher prices, on average, than they did to independent customers) suggested that, rather than trying to foreclose independent RMX

¹¹ Foreclosure occurs when a vertically-integrated company restricts its rivals' access to customers or to an essential input. If the strategy is successful, rivals may be excluded from the market (total foreclosure) or be unable to compete effectively (partial foreclosure).

producers, the aim of the Majors was to soften competition in the downstream RMX markets.¹²

69. On this basis and given the constraints on the time and resources available for our investigation overall, we did not have reason to prioritize further work to establish whether any foreclosure might have occurred in particular local markets for RMX, and did not do so.

Effects of policy and regulation on competition

70. We considered whether certain aspects of policy and regulation that covered the relevant markets could affect the way competition works in those markets.
71. We examined the operation of aggregates landbanks in detail.¹³ We had several concerns about the operation of landbanks, including the possibility that existing aggregates producers might have an incentive to obtain and hold sites with permitted reserves (either without developing them further, or by mothballing previously operational sites) so that the landbank in an area remained above the minimum target period and new entrants would find it difficult to obtain planning permission for new sites.
72. However, our analysis of aggregates landbank data indicated that aggregates producers' shares of permitted reserves in landbanks were in most cases in proportion to their share of supply of aggregates. Further, we saw evidence that the planning system was felt to work well and applications for new primary aggregates sites did not tend to be constrained by landbank considerations. We also noted the arguments that holding sites with permitted reserves without developing them (or mothballing previously operational sites) in order to preserve landbanks and prevent competitors obtaining planning permission (a) would not be commercially viable, and (b) would raise the possibility that the relevant planning authorities could issue prohibition orders on such sites which would prevent the extraction of aggregates in the future. We also noted that the Government's new national planning framework and planning guidance helped address our landbank concerns. Taken together, we found that these factors suggested that planning policy concerning aggregates landbanks was unlikely to be distorting competition in local aggregates markets.
73. We examined the extent to which the aggregates planning system had the potential to increase market transparency between suppliers and found that it was unlikely that commercially sensitive information would be exchanged between suppliers during the planning process.
74. We also examined the effect of the aggregates levy on competition. The aggregates levy (currently £2 per tonne when primary aggregates are commercially exploited) was introduced in 2002 with the aims of reflecting some of the environmental costs of quarrying and introducing a price incentive to encourage the use of waste, spoil and recycled aggregates.
75. We recognized that the introduction of the aggregates levy had placed an additional cost on primary aggregates production resulting in an increase in the price of primary

¹² Although we noted that vertical integration could have the effect of dampening competition in RMX markets, we thought the main impact of vertical integration would be to dampen competition between cement suppliers through the role of vertical integration in coordination.

¹³ In the context of aggregates planning, a 'landbank' is defined as a stock of planning permissions (as measured in years) for permitted reserves (ie reserves for which planning permission has been granted allowing them to be extracted) to ensure continuity of aggregates production for a set number of years based on current extraction rates.

aggregates. We also recognized that the effectiveness of the levy in incentivizing the use of secondary and recycled aggregates (which is the primary aim of the levy) might be limited by the extent of substitutability between primary aggregates and secondary and recycled aggregates. However, we concluded that the aggregates levy did not give rise to specific concerns relating to competition, as the effects of the levy on patterns of aggregate use were consistent with—and did not extend beyond—the intended policy aims. We considered that, while it might be possible that the Majors could cover the cost of the levy from other areas of their business more easily than smaller producers, any potential distortion in competition arising from the different scale and diversity of activities of producers was not a direct consequence of the aggregates levy. We found that, given that the levy applied in the same way to all primary aggregates producers, there was no distortion between competitors introduced as a result of the levy.

76. The European Union Emissions Trading Scheme (EU ETS) is a carbon trading system designed to limit and reduce the greenhouse gas emissions produced by energy-intensive industry sectors (including cement clinker production) and electricity generators. We considered the effect of the ETS ‘partial cessation’ rules on the incentives of EU cement producers in certain countries (such as Spain, Greece and the Republic of Ireland) where domestic demand was currently extremely low relative to production levels in previous years. We looked at their incentives to export more cement to GB as a result of the partial cessation rules as part of our assessment of the constraint from imported cement on GB-produced cement.¹⁴ Several other concerns were also raised with us about the effect of the ETS on competition in the GB cement markets, including that:
- (a) it gave cement producers outside the EU (which were not covered by the ETS) a significant competitive advantage relative to EU producers because they did not incur the costs associated with the ETS; and
 - (b) the partial cessation rule could affect cement production efficiencies, as it gave cement producers incentives to keep all their plants open, albeit at a reduced rate of capacity utilization, so as to obtain a full entitlement of carbon allowances.
77. We noted that it could, in principle, be the case that the ETS created a distortion in the relative costs of producing cement inside and outside the EU. However, because none of the cement supplied in GB is currently imported into GB from outside the EU, we do not believe that the existence of the ETS is distorting competition in the GB cement market in favour of non-EU producers to a material extent.
78. We saw evidence that the way carbon allowances were allocated to cement producers under the ETS, together with the partial cessation rule, created incentives for GB producers to allocate production between their plants in a less efficient way than would otherwise be the case, in order to retain in full their free allocations of carbon allowances. This means that some less efficient plants may continue to operate and that economies of scale from concentrating production at fewer plants are not being realized. These inefficiencies could have the effect of increasing the cost of cement production and ultimately increasing the price consumers pay for cement. However, we did not find evidence that, even if marginal costs are increased for some producers as a result of such inefficiencies, this has had a material effect on cement prices. Therefore we reached no decision on whether the incentives for

¹⁴These incentives arise because, under the partial cessation rules, cement producers that are not producing at least 50 per cent of their historical clinker production (with thresholds also at 25 and 10 per cent) have their carbon allowances (ie permits to emit CO₂ under the ETS) dramatically reduced. Because carbon allowances are currently allocated free to EU cement producers and are tradable, their loss would represent a significant loss of revenue for the cement producers affected.

inefficient production created by the ETS partial cessation rules gave rise to an AEC. We were, however, concerned that we observed these incentives for inefficient production (ultimately resulting in higher carbon emissions than might otherwise be the case), which are generated by the way in which carbon allowances are allocated to cement producers under the ETS and the partial cessation rules.

79. We also examined the nature and interaction of several UK government schemes relating to energy efficiency, and their possible impact on competition in the relevant markets:
- (a) The Carbon Reduction Commitment (CRC) started in April 2010 and is aimed at improving energy efficiency for large organizations whose electricity consumption exceeds 6,000 MWh. The CRC operates as a UK-wide ‘emissions trading’ scheme and requires each participating organization to (among other things) purchase allowances from the Government to cover its carbon emissions for the previous year. The CRC does not apply to those carbon emissions that are already covered by the ETS, and therefore excludes cement producers in the UK. However, the CRC does cover large aggregates sites.
 - (b) A Climate Change Agreement (CCAg) is a voluntary agreement entered into with the Government by a sector. Under a sector ‘umbrella agreement’, any operator (that meets the eligibility criteria) in certain energy-intensive industries can enter the sector agreement. The cement/clinker and slag grinding (eg GGBS) sectors (among others) have entered into CCAgs with the Government. Aggregates producers are, however, not covered by a CCAg.
80. We found that these policies and their interaction distorted competition in that they had different impacts on different types of producers of the reference products—in particular, aggregates—in a manner that was unrelated to the energy efficiency of their operations (ie the intended policy outcome of these regulations). For example, an integrated aggregates and cement producer which had a CCAg would be exempt from the CRC but a stand-alone large aggregates company would have to comply with the CRC in full. This arises because:
- (a) the CRC does not apply to those carbon emissions already covered by the ETS (eg cement operations) but covers large aggregates sites;
 - (b) smaller aggregates producers would be exempt; and
 - (c) if over 25 per cent of an organization’s emissions are covered by a CCAg (which cover, among others, producers of cement but not producers of aggregates), it will be exempt from certain aspects of the CRC (‘the CCAg exemption’).
81. We found that the interaction between CCAgs and the CRC appeared to increase the costs of some aggregates producers more than others, regardless of the relative efficiencies of producers in terms of carbon emissions per tonne of aggregates produced. However, the Government already proposes to abolish the CCAg exemption to the CRC from 1 April 2014. We therefore did not find that the interaction between CCAgs and the CRC was a feature giving rise to an AEC.

Remedies

82. To remedy the AECs, we decided to introduce a package of remedies comprising three main elements:
- (a) the divestiture of a cement plant by Lafarge Tarmac with supporting measures;

- (b) two measures aimed at reducing transparency in the GB cement markets (the transparency reduction measures); and
 - (c) measures to promote competition in the GGBS supply chain, including the divestiture of an active GGBS plant by Hanson.
83. Our cement plant divestiture remedy will require Lafarge Tarmac to choose between divesting either its Cauldon or Tunstead cement plant. In support of this divestiture, we are requiring the following measures:
- (a) *Inclusion of RMX plants in the divestiture package.* A purchaser of the divested cement plant should be able to acquire a limited number of RMX plants from Lafarge Tarmac, subject to the purchaser's total internal cementitious requirement following divestiture being capped at 15 per cent of the acquired cement production capacity beyond which point no further RMX plants need to be divested.
 - (b) *Suitable purchaser.* A purchaser must satisfy the CC's suitable purchaser criteria and cannot be one of the GB cement producers. This requirement will facilitate the entry of a fifth and independent GB cement producer.
 - (c) *Implementation of divestiture.* A monitoring trustee should be appointed as soon as is reasonably practicable following publication of this report to ensure the protection of the divestiture package until completion of the divestiture. The CC will reserve the right to appoint a divestiture trustee should divestiture not be implemented within the specified divestiture period, or if the CC reasonably expects that an effective disposal would not be achieved within this divestiture period.
84. Our two transparency reduction measures are:
- (a) *Restrictions on the publication of GB cement market data.* For each set of monthly, quarterly and annual GB cement market data that is currently published by the Minerals Products Association (MPA) and the Department for Business, Innovation & Skills (BIS), there should be a time lag of no less than three months from the time to which the data refers, before the data can be made public. We will be seeking undertakings from the MPA to put this remedy into place and will also make an Order preventing GB cement producers from taking actions to circumvent the remedy.
 - (b) *Prohibition of the practice of issuing generic price announcement letters.* We have decided to introduce an Order prohibiting GB suppliers of cementitious materials, including GB cement producers and importers, as well as suppliers of other cementitious materials such as GGBS and PFA (but with certain exemptions, eg builders' merchants), from sending generic price announcement letters to their customers. Instead GB suppliers of cementitious materials should only be permitted to send customer-specific price announcement letters that state clearly, as a minimum, both the current actual unit price and the proposed revised unit price.
85. The core of our intervention to increase competition in the GGBS supply chain is a requirement on Hanson to divest one of its three active GGBS production facilities at Port Talbot, Scunthorpe, or Purfleet. The divestiture with the fewest risks, in our view, is for Hanson to divest its GGBS plant at Scunthorpe. The CC would also be prepared to consider the divestiture of one of Hanson's other active GGBS plants (which are at Port Talbot and Purfleet), if it could be shown that the additional risks

associated with these divestitures could be adequately managed. In support of this divestiture, we are requiring the following measures:

- (a) *Access to GBS.* Lafarge Tarmac should be required to continue with its GBS supply agreement with the acquirer of the divested GGBS plant and give effect to its novation and/or amendment and should thereby be required to enter into a long-term supply agreement with the acquirer of the divested GGBS plant providing the acquirer with access to GBS on a secure and cost-effective basis. The resulting GBS supply arrangements should also enable the acquirer of the divested GGBS plant to participate in any future expansion of the GGBS market and to have the option of using GBS produced at the Teesside GBS plant that Hanson chooses not to utilize under its own GBS supply agreement with Lafarge Tarmac.
 - (b) *Suitable purchaser.* A purchaser of the divested GGBS plant must satisfy the CC's suitable purchaser criteria and cannot also be one of the GB cement producers.
 - (c) *Monitoring and divestiture trustees.* A monitoring trustee should be appointed as soon as reasonably practicable to ensure the protection of the divestiture package until completion of the divestiture. The CC will reserve the right to appoint a divestiture trustee should divestiture not be implemented within the specified divestiture periods for the GGBS plant divestiture, or if the CC reasonably expects that an effective disposal would not be achieved within the relevant divestiture period.
86. Each of the remedy measures that form part of our package of remedies is capable of effective implementation, monitoring and enforcement. Once the relevant divestitures have been implemented, we expect ongoing monitoring and compliance costs of the package of remedies to be very small.
87. We concluded that this package of remedies represents a comprehensive and effective solution to the AECs we found. This package of remedies could be implemented and have a substantial beneficial impact on competition and on market outcomes within a relatively short timescale following publication of this report. We would expect this beneficial impact to grow over time, such that we would expect the full benefits of increased competition to be realized within five years of publication of this report.
88. We considered a number of alternatives, but were unable to identify a less onerous package of measures that would be similarly effective. Having evaluated the potential benefits and costs of these measures, we concluded the beneficial effects that would flow from effectively addressing these AECs were likely to outweigh significantly the potential costs of our remedies. We therefore concluded that our package of remedies represented a proportionate solution to the AECs and the resulting customer detriment.
89. We concluded that this package of remedies represents as comprehensive a solution as is reasonable and practicable to the AECs and resulting customer detriment that we found.

Findings

1. The reference and our statutory task

- 1.1 On 18 January 2012, the OFT referred the supply or acquisition of aggregates, cement and RMX to the CC for investigation. The reference was made under sections 131 and 133 of the Act. In accordance with subsections 133(2) and (3)(a) and (b) of the Act, the OFT required the CC to confine its investigation to the effects of features of such market or markets as exist in connection with the supply or acquisition of such goods or services in GB. The terms of reference for our investigation are provided in Appendix 1.1.
- 1.2 Section 134(1) of the Act requires us to decide whether ‘any feature, or combination of features, of each relevant market prevents, restricts or distorts competition in connection with the supply or acquisition of any goods or services in the United Kingdom or a part of the United Kingdom’. If the CC decides that there is such a feature or combination of features, then it will have found that there is an AEC within the meaning of the Act.¹
- 1.3 Under section 131(2) of the Act, a ‘feature’ of the market refers to:
- the structure of the market concerned or any aspect of that structure;
 - any conduct (whether or not in the market concerned) of one or more than one person who supplies or acquires goods or services in the market concerned; or
 - any conduct relating to the market concerned of customers of any person who supplies or acquires goods or services.
- 1.4 If the CC finds that there is an AEC, it is required under section 134(4) of the Act to decide whether action should be taken by it, or whether it should recommend the taking of action by others, for the purpose of remedying, mitigating or preventing the AEC, or any detrimental effect on customers² so far as it has resulted from, or may be expected to result from, the AEC; and, if so, what action should be taken and what is to be remedied, mitigated or prevented. The Act requires the CC ‘to achieve as comprehensive a solution as is reasonable and practicable to the AEC and any detrimental effects on customers so far as resulting from the AEC’.³ In considering remedies, the CC may take into account any relevant consumer benefits, as defined in the Act, arising from the feature or features of the market.⁴
- 1.5 Our terms of reference (see Appendix 1.1) state that aggregates includes primary, secondary and recycled aggregates; cement means grey cement; and RMX includes on-site batching (volumetric trucks). We consider that grey cement means not just ordinary cement but cement blends in which ordinary cement is blended with other cementitious products⁵ to produce cements of differing physical properties. All these

¹ Section 134(2) of the Act.

² A detrimental effect on customers is defined in section 134(5) of the Act as one taking the form of: (a) higher prices, lower quality or less choice of goods or services in any market in the UK (whether or not the market to which the feature or features concerned relate); or (b) less innovation in relation to such goods or services.

³ Section 134(6) of the Act.

⁴ Section 134(7) of the Act.

⁵ Cementitious products include GGBS and PFA—see Section 2.

products are described further in Section 2 of this report, along with the vertical relationships between them.⁶

- 1.6 In the remainder of this section, we set out (a) the background to the reference; (b) our conduct of the investigation; and (c) the structure of these findings.

Background to the reference

The OFT's reference decision

1.7 The OFT commenced a market study of the aggregates sector on 7 September 2010. Its study revealed a range of concerns among stakeholders about competition. Most concerns related to the extent of vertical integration between the aggregates, cement and RMX markets, and to the conduct of the Majors in these markets.⁷ The OFT therefore decided in February 2011 to extend the scope of its market study to include cement and RMX.

1.8 The OFT found that the industry had a number of features which might adversely affect competition:⁸

- barriers to entry, in terms of the difficulty of obtaining planning permission and physical capital requirements;
- high concentration, with the Majors accounting for 90 per cent of the cement market, 75 per cent of aggregates sales and about 70 per cent of RMX production;
- vertical integration, with complaints about vertically integrated companies refusing to supply or discriminating against non-integrated competitors;
- homogeneous products with little differentiation between companies in terms of brand or quality;
- transparency facilitated (among other things) by cross-sales,⁹ industry reports and the planning system; and
- multi-market contacts between companies.

1.9 The OFT also found evidence that competition might not be working well in these markets, in particular due to: difficulties faced by independent RMX producers in

⁶ In particular, cement and aggregates are key inputs into the production of RMX.

⁷ In this report, we use the term 'the Majors' to refer to the five largest heavy building materials producers in GB. At the time of the OFT's market study these companies were (in alphabetical order): Aggregate Industries UK Limited (Aggregate Industries), Cemex UK Operations Limited (Cemex), the UK construction and building materials businesses of Hanson and HeidelbergCement AG (Hanson), Lafarge Aggregates Limited and Lafarge Cement UK Limited (together Lafarge) and the UK and international operations of Anglo American plc's construction and building materials arm (Tarmac). Following the market developments described in paragraphs 1.12 to 1.19, these companies are (in alphabetical order): Aggregate Industries UK Limited (Aggregate Industries), Cemex UK Operations Limited (Cemex), the UK construction and building materials businesses of Hanson and HeidelbergCement AG (Hanson), the UK cement, concrete, aggregates and asphalt business of Mittal Investments Sarl (Hope Construction Materials (HCM)) and the entity created on 7 January 2013 as a result of the JV between Lafarge Group and Anglo American in respect of their UK activities in the production of cement, aggregates, asphalt and RMX (Lafarge Tarmac). Where necessary in this report, we distinguish between the pre-2013 Majors and the Majors as at 2013. All the Majors with the exception of HCM have significant aggregates operations in GB, and they also all have significant RMX operations in GB. All the Majors with the exception of Aggregate Industries produce cement in GB, and there are no other cement producers in GB.

⁸ *Aggregates: The OFT's reason for making a market investigation reference to the Competition Commission*, January 2012, OFT1358: www.of.gov.uk/shared_of/market-studies/of1358ref.pdf.

⁹ Sales and purchases of aggregates and cement between the Majors.

obtaining competitive quotes for cement from alternative suppliers; a possible 'squeeze' between the price of cement and the price of RMX; and pricing letters from the Majors indicating that pricing rivalry was not as intense as it could be. As noted, the OFT made its decision to refer the aggregates, cement and RMX markets to the CC on 18 January 2012.

European Commission investigation under Article 101 TFEU

- 1.10 On 10 December 2010, DG COMP announced that it had opened an investigation into suspected anti-competitive practices by several manufacturers of cement and related products in various European countries including the UK, involving possible infringements of Article 101(1) of the TFEU.¹⁰ DG COMP said that it intended to investigate in particular possible import/export restrictions, market sharing and price coordination in the markets for cement and related products.
- 1.11 The DG COMP investigation remained open during our market investigation. It has not prevented us conducting a full investigation of features which may adversely affect competition in the markets referred to us. We have kept DG COMP informed regarding the issues that we have considered in the course of our investigation, along with the progress and timing of our investigation more generally. We note that the nature and purpose of our investigation are different from those of the investigation being carried out by DG COMP.¹¹

Market developments

- 1.12 In recent years, there have been some significant developments in these markets, which we have taken into account in our investigation.
- 1.13 One of the most noteworthy of these developments was the creation of a JV between the UK construction materials businesses of Lafarge Group and Anglo American (the Anglo–Lafarge JV). The proposal to create this JV, in which each of the JV partners would take a 50 per cent stake, was announced on 18 February 2011, covering their aggregates, cement, RMX, asphalt and contracting operations.
- 1.14 On 2 September 2011, the OFT referred to the CC for investigation and report under section 33(1) of the Act the Anglo–Lafarge JV. The CC was required to determine whether the proposed JV might be expected to result in what is known as a 'substantial lessening of competition' (SLC) within any market or markets in the UK for goods or services.¹²

¹⁰ http://europa.eu/rapid/press-release_IP-10-1696_en.htm?locale=en.

¹¹ The relationship between Articles 101 and 102 of the TFEU on the one hand, and national competition law on the other, is governed by Article 3 of Council Regulation (EC) No 1/2003, which in the context of this investigation is considered further in Appendix 13.8.

¹² Section 36(1)(b) of the Act. The statutory questions addressed in a merger inquiry such as the Anglo–Lafarge JV inquiry under sections 33 and 36 of the Act are different from those addressed in a market investigation (such as this one) under sections 131 and 133. In a merger inquiry, the CC is required to determine whether the merger might be expected to result in an SLC—the CC does not evaluate the effectiveness of competition in the market more broadly. In contrast, in a market investigation, the CC is required to examine how competition functions in the referred markets. It is also important to note that the CC members of the Group responsible for taking decisions in this market investigation are different from those responsible for taking decisions in the Anglo–Lafarge JV inquiry. In paragraph 5 of its [response to the provisional findings](#), Lafarge Tarmac suggests that this observation (also made in the provisional findings) amounts to an 'apparent attempt by the current inquiry Group to distance itself from the conclusions reached in the Merger Review' and that this is 'fallacious'. We note that in the merger inquiry the previous Group made findings as to the susceptibility 'of the bulk cement market to coordination before the proposed JV', and the extent to which the JV would 'increase the ability of UK cement producers to reach and monitor coordination' (see paragraphs 6.202 & 6.222 of the [JV report](#)). Given those findings, and in order to avoid any risk of pre-judgment, a different Group was constituted for this investigation. In the event, the JV was allowed to proceed subject to certain divestments (see paragraphs 1.16–1.18 below). That was on the basis that the merger would then be 'unlikely to result in a material change

- 1.15 The CC published its report on the Anglo–Lafarge JV on 1 May 2012. In that report, the CC concluded that the proposed JV might be expected to result in an SLC leading to prices that would be higher than might otherwise be the case in the following markets:
- the market for the supply of bulk cement in the UK;
 - 19 local markets and two national markets for the supply of various types of aggregates;
 - two local markets for the supply of asphalt; and
 - seven local markets for the supply of RMX.
- 1.16 The CC therefore required Anglo American and Lafarge Group to divest various cement, aggregates, RMX and asphalt assets as a condition for allowing the Anglo–Lafarge JV to proceed.
- 1.17 On 7 January 2013, Anglo American and Lafarge Group concluded the divestiture of a package of cement, RMX, aggregates and asphalt operations to Mittal Investments Sarl (MI), thereby creating HCM. This transaction implemented the majority of the divestitures required by the CC following its report on the Anglo–Lafarge JV. On the same day, Anglo American and Lafarge Group completed their JV, creating a new entity called Lafarge Tarmac.
- 1.18 To implement other divestitures required by the CC as a result of the Anglo–Lafarge JV inquiry, Anglo American proposed to dispose of Tarmac’s stake in Midland Quarry Products Ltd (MQP), a 50:50 JV between Tarmac and Hanson involved in quarrying, dry stone processing, production of asphalt, and the supply of rail ballast. Hanson acquired the 50 per cent of MQP that it did not already own on 2 April 2013. All divestitures required by the CC as a condition for allowing the Anglo–Lafarge JV to proceed have now been completed.
- 1.19 Further details of these and other market developments, and our assessment of their impact on competition, are in Sections 5, 6, 7, 8 and 9 of this report.¹³

Conduct of the investigation

- 1.20 The following paragraphs provide an overview of the process we followed in our investigation and how we utilized the evidence, data and information we received. Further details can be found in Appendix 1.1.

in the susceptibility of the UK bulk cement market to coordination’ (paragraph 8.372). Contrary to Lafarge Tarmac’s further assertion in paragraph 5 of its [response](#), it cannot be inferred from this that the conclusion of the merger inquiry gave rise to a legitimate expectation that no problems would subsequently be identified in the cement market: the divestments that were accepted by Lafarge and Anglo American were simply those necessary to avoid an SLC resulting from the proposed merger. In paragraph 3.1 of its [response to the provisional findings](#), Hanson raises concerns over the fact that the staff team for the current investigation ‘has been the same case team that analysed and adjudicated the Lafarge/Anglo-American JV’. It is true that many of the key staff did transfer from the merger inquiry to the market investigation. However, any decisions in either case were for the Group members alone, not the staff, and as already observed any risk of pre-judgment was addressed by the constitution of a new Group. To have had, in addition, a substantially new staff team would not have been an efficient use of the CC’s resources.

¹³In late 2013, it was announced that Lafarge Tarmac planned to purchase Tarmac Building Products Limited (TBP) from Anglo American. TBP is active in the production and sale of heavy building materials. In particular, TBP’s heavy building product activities include the production of mortar, concrete blocks, bagged aggregates, binding products, sports surfaces and foundry sands. Following an internal reorganization in the 2009/10 financial year, Tarmac and TBP became stand-alone businesses and their shared services were separated. TBP was not part of the Lafarge Tarmac JV at its inception. Both TBP and Lafarge Tarmac operations will continue to operate independently until regulatory approvals are obtained. We consider the implications of this possible transaction in Section 13 of this report.

- 1.21 We published an [issues statement](#) on 8 March 2012 based on the terms of reference and the initial information and evidence we had received. On 16 May 2012, we published a [notice](#) setting out how we intended to handle the relationship between our investigation, the CC's Anglo American–Lafarge JV inquiry and DG COMP's Article 101 TFEU investigation. On 29 May 2012, we published a [notice](#) of our intention to carry out aggregates markets case studies in certain parts of GB.
- 1.22 We held hearings with suppliers of aggregates, cement and RMX, relevant trade associations and customers between May 2012 and October 2012.
- 1.23 Following receipt of further evidence, on 26 November 2012 we published an [updated issues statement](#). We held second hearings with the Majors in December 2012 and an initial hearing with MI in January 2013. We published a series of [working papers](#) between November 2012 and March 2013.
- 1.24 The updated issues statement and working papers took account of submissions from parties in [response to the initial issues statement](#), responses to questionnaires and evidence provided in hearings with the main parties and third parties.
- 1.25 We [notified](#) our provisional findings on 21 May 2013 and published our [provisional findings](#) in full on 23 May 2013. As we had provisionally concluded that there were two AECs in relation to cement, we also published a [Notice of possible remedies](#) on 21 May 2013.
- 1.26 Following the publication of our provisional findings and Notice of possible remedies, we received submissions from a number of interested parties in response to them and also held [response hearings](#) with a wide variety of parties. We also gathered additional evidence from parties and conducted further analysis. On 25 July 2013 we published a [working paper on estimating the competitive price of cement](#) from cost and demand data and received a number of responses to this. As a result of further analysis and evidence we received into the supply of GBS and GGBS in GB (which can be an input into cement or a partial substitute), we published an [Addendum to the provisional findings](#) on 8 October 2013, augmenting our provisional findings by identifying a third AEC in the market for GGBS. On 8 October we also published a [summary of our provisional decision on remedies](#) for consultation and the [full provisional decision](#) was published on 10 October, which took account of the evidence received to date and the analysis contained in the Addendum to the provisional findings.
- 1.27 We received a number of further responses from parties in [response to our provisional decision on remedies and our Addendum to provisional findings](#), which have been taken into consideration in this report.
- 1.28 During our investigation, we published a considerable number of documents on the [CC website](#). These include non-confidential versions of parties' written submissions, non-confidential versions of summaries of hearings with a number of parties, as well as our issues statements, working papers, the results of a number of studies and analyses, our provisional findings, Addendum to provisional findings and our provisional decision on remedies. Further details can be found in Appendix 1.1.

Structure of final report

- 1.29 This document, together with its appendices, constitutes our final report which sets out our findings based on our analysis of the evidence received during the course of the investigation. It refers, where appropriate, to material published separately on the

CC website. The report, however, is self-contained and is designed to provide all material necessary for an understanding of our findings.

1.30 The remainder of these findings is set out as follows:

- Section 2 describes the background to the aggregates, cement and RMX industries, including relevant policy frameworks and regulation of the industry.
- Section 3 provides some reference information on the main construction materials companies active in the aggregates, cement and RMX industries.
- Section 4 establishes the framework for our competitive assessment of these industries.
- Section 5 considers market definition for aggregates, cement, GGBS and RMX.
- Section 6 sets out our analysis and assessment of competition in the supply and acquisition of aggregates.
- Sections 7 and 8 set out our analysis and assessment of competition in the supply and acquisition of cement and in the GGBS supply chain.
- Section 9 sets out our analysis and assessment of competition in the supply and acquisition of RMX.
- Section 10 describes our assessment of the effect on competition of vertical integration between cement and/or aggregates on one hand, and RMX on the other.
- Section 11 sets out our consideration of the effects of applicable policy and regulation on competition in the supply of aggregates, cement and RMX.
- Section 12 presents our findings in relation to the statutory questions that we are required to answer in relation to the existence of one or more AECs.
- Section 13 sets out our decisions in relation to remedies and the reasons for those decisions.

2. Industry background

Introduction

- 2.1 In this section, we provide background information on aggregates, cement and RMX and set out at a high level how total GB demand for these products has changed over the last ten years. For each product, we describe relevant regulations and public policies.
- 2.2 We conclude by describing the input relationships between these products, and their extent in practice.

Aggregates

- 2.3 The following paragraphs cover:
- (a) the different types of aggregates available in GB;
 - (b) how total GB demand for aggregates has varied over the last ten years;
 - (c) the planning regime for land-won primary aggregates (as defined in paragraphs 2.14 to 2.30);
 - (d) marine aggregates (as defined in paragraphs 2.31 to 2.35) and the licensing regimes for the dredging of marine aggregates;
 - (e) secondary and recycled aggregates (as defined in paragraphs 2.36 and 2.37) and the applicable planning regimes; and
 - (f) the aggregates levy.
- 2.4 We return to items (c) to (f) in Section 6 (as part of our competitive assessment of the supply of aggregates in GB) and Section 11 (as part of our assessment of the impact on competition of policy and regulation). Where necessary, further details are provided in Appendix 2.1.

Description of products

- 2.5 Aggregates are the granular base materials used in the construction of roads, buildings and other infrastructure. Aggregates may be divided into:
- (a) primary aggregates, which are extracted from quarries, pits and (in the case of marine aggregates) the seabed;
 - (b) secondary aggregates, which are by-products of industrial and mining processes;¹ and
 - (c) recycled aggregates, which are produced, for example, from demolition sites and construction waste.²

¹ For example, steel and BFS (by-products of steel and iron manufacturing processes respectively) and china clay and slate quarry waste.

² Other sources include highway resurfacing (which produces asphalt planings), rail ballast, excavation, municipal waste and utility operations.

- 2.6 Primary aggregates comprise sand and gravel and crushed rock (and a number of products within these two broad categories³):
- (a) crushed rock is quarried mainly from hard, naturally occurring rock deposits (eg granite, gritstone and limestone); and
 - (b) sand and gravel is sourced from naturally occurring alluvial deposits on land or on the seabed.
- 2.7 To produce crushed rock, rock is blasted from a quarry, then crushed and screened (ie sorted into different sizes—this process is also known as ‘grading’). The production of sand and gravel aggregates involves crushing (where necessary), washing, screening and clarification processes.
- 2.8 GB has a ‘rock line’ which extends roughly from Weymouth in the South-West to Kingston-upon-Hull in the North-East. To the north of the rock line, particularly in Scotland, Wales and north England, there are large natural deposits of rocks of the type that can be accessed for extraction and crushing. By contrast, to the south of this line, particularly in East Anglia and the South-East, naturally occurring deposits of sand and gravel are abundant but there is little or no accessible rock. Some exceptions to this exist, for example there are large deposits of granite in Leicestershire.
- 2.9 Aggregates are classified by the grade (ie size) of the material:⁴
- (a) Fine aggregates are generally materials with a particle size of less than 5mm diameter. Fine aggregates include dust produced by crushing rock, gravel, recycled or secondary materials as well as naturally occurring sands.
 - (b) Coarse aggregates are materials that are produced to a specific grading above 5mm diameter. In most applications the sizes used are 10mm, 14mm, 20mm, 28mm and 40mm, although larger materials may be produced.
 - (c) Granular aggregates do not have a uniform size and are used to provide stability in foundation layers and bulk fill applications. They are composed of a combination of coarse and fine materials. The coarse materials provide strength and bulk while the finer component binds the material together and provides stability when compacted.
- 2.10 Producing a specific grade of primary aggregate necessarily results in a variety of other grades being co-produced.
- 2.11 Aggregates are used mainly for construction purposes and we use the term ‘construction aggregates’ to refer to aggregates used for such purposes. These applications include:
- (a) as a sub-base (the layer of stone which forms the foundation for many construction projects) and for other structural fills. In this report, we refer to these uses as ‘general construction uses’;
 - (b) in the production of RMX;
 - (c) in the production of other concrete products; and

³ For example, crushed rock aggregates include graded, sub-base, fill and dust products and sand and gravel aggregates include gravel, fine sand and coarse sand products.

⁴ Different producers may adopt slightly different classifications of these grades.

(d) in the production of asphalt.

2.12 There are also specific types of primary aggregates for certain ‘specialist’ applications.⁵ They include (but are not limited to):

(a) Rail ballast, which is a specific type of crushed rock aggregate used as a bedding material underneath railway tracks. Rail ballast is resistant to pressure and breakage and inhibits the growth of plants under the tracks.

(b) High-purity limestone, which is limestone with a calcium carbonate content of over 95 per cent, and which is used for its chemical characteristics. It is also known as chemical stone, and is used in industrial applications including flue gas desulphurization at coal-fired power plants⁶ and the production of chemicals.⁷ Limestone powders derived from high-purity limestone are also used in the agricultural and horticultural sectors, although the precise chemical composition is not a key property of limestone used in this application.

(c) High polished stone value⁸ (PSV) aggregates, which are derived from crushed rock or sand and gravel sources.⁹ High PSV aggregates are used for asphalt road surfacing in situations where there are high levels of traffic, high-speed roads or accident risk areas such as school crossings.¹⁰

Demand for aggregates in GB

2.13 Figure 2.1 shows total GB production volumes of aggregates (primary, secondary and recycled) over the period 2002 to 2012. A significant downturn in production (a decline of 31 per cent) over the period 2007 to 2009 can be seen, coinciding with the UK recession.

⁵ We estimate that in 2010, around 5 per cent of UK aggregates production was for industrial, agricultural and horticultural (ie non-construction) use. However, our definition of specialist aggregates is broader than this, and includes rail ballast and high PSV stone, indicating that 5 per cent would be an underestimate of the proportion of aggregates production accounted for by specialist aggregates. Source: BGS Minerals for 2010.

⁶ FGD is the abatement of acid gas emissions from coal-fired power stations. Coastal stations use seawater to scrub acids from the combustion gases, while inland stations use a slurry of limestone, created by milling of high-purity limestone with water at the power stations. The slurry is injected into the gas stream to react with the acids, principally sulphur dioxide, to form gypsum, which is created as a by-product of this process.

⁷ Including soda ash, precipitated calcium carbonate and sinter.

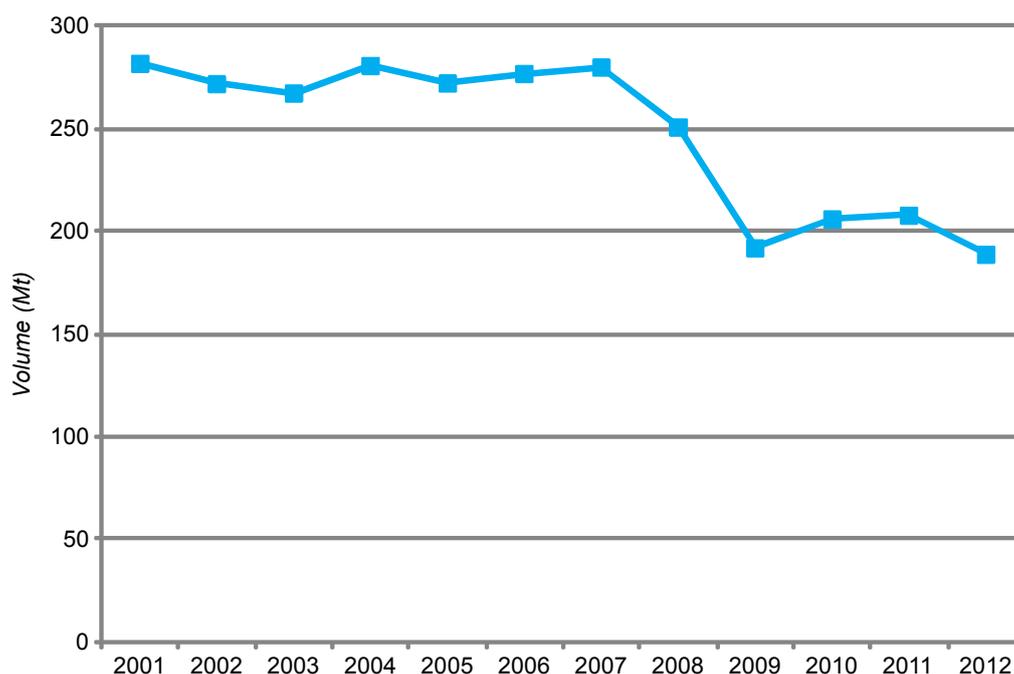
⁸ Polished stone value is an attribute of aggregates. The higher the PSV of a particular aggregate, the greater the skid resistance of the asphalt produced using that aggregate.

⁹ High PSV materials are also produced from secondary aggregates (in particular, slag).

¹⁰ We note that rail ballast and high PSV aggregates for road surfacing could strictly be considered construction applications, but, for the purposes of this report, we have found it clearer to deal with them as specialist applications.

FIGURE 2.1

GB production of primary, secondary and recycled aggregates



Source: Mineral Products Association (MPA), February 2013.

The planning regime for land-won primary aggregates

Overview of GB aggregates planning regime

- 2.14 In GB, national policy on land use planning, both in general and in particular for aggregates extraction, forms an integral part of the Government’s wider economic and environmental policy objectives. Consequently, the broader objective of ‘sustainable development’ features heavily as a general planning policy objective.
- 2.15 The legal framework in GB within which the current planning regime operates was first set out in the Town and Country Planning Act 1947 and the Town and Country Planning Act 1990 (both, as amended), and further developed through subsequent legislation, eg the Planning and Compulsory Purchase Act 2004.¹¹ Planning legislation and policy is a devolved matter and in GB, responsibility for developing each nation’s planning policy framework lies with the Department for Communities and Local Government (DCLG) for England, the Welsh Government for Wales and the Scottish Government for Scotland.
- 2.16 Land-won construction aggregates account for around 75 per cent of all minerals extracted from the UK land mass,¹² and planning in relation to land-won primary

¹¹ www.bgs.ac.uk/mineralsuk/planning/legislation/home.html#LUP.

¹² British Geological Survey: *Managing aggregates supply in England, A review of the current system and future options*, 2008, Section 2.1.

aggregates forms a significant part of the minerals¹³ planning activities of each national body.

- 2.17 The planning systems throughout GB are ‘plan-led’, whereby the foundation of each system is the preparation of strategic plans by local authorities which set out how they propose land will be used within their local areas. In the case of minerals planning, the relevant local authority is termed a ‘Minerals Planning Authority’ in England or Wales, or a ‘Planning Authority’ in Scotland.¹⁴ For ease of reference, for the remainder of this section, the term ‘LMPA’ is used to refer to the relevant local minerals planning authorities in England, Wales and Scotland.
- 2.18 An LMPA has the following primary planning responsibilities:¹⁵
- (a) formulating local policies and plans to guide future developments in line with the relevant national planning policy framework;
 - (b) assessing, managing and controlling individual developments that are proposed through deciding planning applications; and
 - (c) enforcing, and monitoring, of existing developments to ensure that they operate within the terms of their planning permissions.¹⁶
- 2.19 An LMPA’s policy on minerals development for its local area is set out in its Local Minerals Plan (in England) or its Local Development Plan¹⁷ (in Wales and Scotland) (together, the ‘Local Plan’), which must take account of the relevant national planning policy, and ultimately forms the local policy framework upon which decisions on individual planning applications are made. Each nation’s planning legislation requires that decisions must be taken in accordance with the LMPA’s Local Plan unless material considerations indicate otherwise.¹⁸ Further details about the preparation of Local Plans are in Appendix 2.1.
- 2.20 Where planning permission (ie formal approval) is granted, it is often with conditions or obligations attached.¹⁹ In England, once an LMPA deems that a planning application is valid, it has eight weeks to reach its decision or 13 weeks in the case of applications for major developments, which include ‘the winning and working or minerals or the use of land for mineral-working deposits’. If an Environmental Statement accompanies the application, the LMPA has 16 weeks to determine the application. Longer time periods for determination may be agreed in writing between the applicant and the LMPA. Further details on the planning process for England are in Appendix 2.1, paragraphs 14 to 18.
- 2.21 Aggregates reserves which have the benefit of planning permission for extraction are referred to as ‘permitted reserves’. Appendix 2.1, Table 1, shows the permitted reserves (measured in megatonnes (Mt), or million tonnes) for land-won primary

¹³ In the UK, ‘minerals’ are defined in Town and Country Planning legislation as ‘all substances in, on or under land of a kind ordinarily worked for removal by underground or surface working, except that it does not include peat cut for purposes other than for sale’. Source: www.bgs.ac.uk/mineralsuk/planning/legislation/home.html.

¹⁴ In England, the LMPA is either the County Council, where there are two tiers of local government (counties and districts), or a Unitary Authority elsewhere. In Wales, the LMPA is the County Council or County Borough Council, and in Scotland, the Planning Authority is a Unitary Authority. Each National Park is also an LMPA or a Planning Authority.

¹⁵ www.bgs.ac.uk/mineralsuk/planning/legislation/home.html.

¹⁶ www.sustainableaggregates.com/overview/policy_extended.htm.

¹⁷ In Wales, the Local Development Plan takes into account the relevant national planning policy framework and the Regional Technical Statements on Aggregates for South and North Wales. In Scotland, the Local Development Plans and also the ‘Strategic Development Plans’ contain the LMPAs’ minerals policies. Sources: Welsh Government and Scottish Government.

¹⁸ The DCLG told us that what constituted a material consideration was a matter for each particular case, but ultimately this was determined by the High Court.

¹⁹ www.bgs.ac.uk/Planning4Minerals/Glossary.htm#handbank.

aggregates in England and Wales only. As at 31 December 2009, total permitted reserves in England and Wales were 3,982 Mt for crushed rock and 565 Mt for sand and gravel, giving a total permitted reserves figure of 4,547 Mt. To put this figure into context, total consumption of primary aggregates (including land-won, marine and imported aggregates) in England and Wales for 2009 was 119 Mt.²⁰

The Managed Aggregates Supply System and national minerals planning policy frameworks

- 2.22 A key objective of aggregates planning policy in GB over many years has been to ensure an adequate and steady supply of aggregates to meet the needs of the construction industry with the minimum of adverse environmental impacts.²¹ This objective was embodied in the adoption of the Managed Aggregates Supply System (MASS) in England and Wales in the late 1970s, and its implementation through national planning policy.
- 2.23 The MASS was established to address the long-term and persistent imbalances between the regional supply and demand across the different regions of England and Wales. In particular, the South-East, the East, Greater London and North Wales faced significant shortages of aggregates supply, whilst surpluses arose in the East Midlands and the South-West. Only the North-East and South Wales were largely considered to be self-contained.²² Appendix 2.1, Figure 1, illustrates the interregional flows in 2009 of crushed rock aggregates for England and Wales. In Scotland, these imbalances were, and continue to be, less pronounced (given Scotland's lower consumption and higher reserves of aggregates), and as such the MASS was not adopted.²³
- 2.24 The MASS was operated as a fully integrated system in England and Wales until Welsh devolution in 1998,²⁴ since when the Welsh Government has been responsible for minerals planning policy in Wales.
- 2.25 National planning policy establishes the principles through which the MASS is implemented (in England and Wales) and supports the legislative and procedural measures that determine how planning decisions are made. Responsibility for developing a national planning policy framework lies with the DCLG for England, the Welsh Government for Wales and the Scottish Government for Scotland,²⁵ whilst decisions to grant planning permissions are taken locally by the LMPAs.²⁶
- 2.26 Whilst the MASS was not formally adopted in Scotland, the respective planning regimes in England, Wales and Scotland share a number of common features. In particular, each national planning policy framework adopts a broadly common approach in relation to the role and responsibilities of the LMPAs, in particular the surveying, identification and selection of sites; safeguarding the availability of undeveloped sites with suitable reserves of aggregates;²⁷ and assessing proposals in

²⁰ British Geological Survey, *United Kingdom Minerals Yearbook 2011*.

²¹ www.sustainableaggregates.com/overview/policy.htm.

²² www.sustainableaggregates.com/overview/policy.htm.

²³ www.sustainableaggregates.com/overview/policy_extended.htm.

²⁴ www.sustainableaggregates.com/overview/policy_extended.htm.

²⁵ www.bgs.ac.uk/mineralsuk/planning/legislation/home.html.

²⁶ www.bgs.ac.uk/Planning4Minerals/CentralGovt_1.htm.

²⁷ Safeguarding a site prevents a site with potential mineral reserves from being 'sterilized' through restricted access by other forms of surface development. Source: DCLG.

relation to how sites should be worked and operated, and subsequently restored following extraction.²⁸

2.27 The operation of the MASS in England and Wales has a number of important characteristics, some of which are also present in Scotland (where the MASS was not formally implemented):

(a) *Security of supply and landbanks*. To meet the objective of securing an adequate and steady supply of aggregates (see paragraph 2.22 above), LMPAs in England, Wales and Scotland are encouraged by their respective national planning policies to maintain a stock of planning permissions to ensure continuity of aggregates production (landbanks).²⁹ Further details of national policy regarding landbanks and the views of main and third parties are in Appendix 2.1.

(b) *Aggregates working parties (AWPs)*. AWP were established in England and Wales (but not in Scotland) in the 1970s to provide technical advice on the supply and demand of aggregates to LMPAs, national and regional government agencies, and the aggregates industry.³⁰ There are currently 11 regional AWP, nine in England and two in Wales. These AWP are advisory rather than decision-making bodies. The Government funds the AWP Secretariat function, and the terms of reference for each AWP are agreed by the National Co-ordination Group, which is chaired by DCLG.³¹ Further detail of the operation of AWP in England and Wales and the views of main and third parties are in Appendix 2.1.

(c) *Assessment of local aggregates demand*. In deciding what provisions to make for future aggregates supply, LMPAs need to form a view of likely local aggregates demand. The nature and extent of guidance offered to individual LMPAs by national governments varies between England, Scotland and Wales and is described in Appendix 2.1.

2.28 Further details of these aspects of national planning policy frameworks, as well as views of main and third parties on the MASS, may be found in Appendix 2.1.

Environmental considerations in the minerals planning system

2.29 The importance of balancing economic growth with the need to safeguard the environment (see paragraph 2.22) means that environmental legislation is an integral part of the aggregates planning process. EU member states are obliged to implement EU Directives and conventions into their national statutory provisions in order to ensure that there are 'common procedural requirements' throughout the EU.³² Whilst there is no specific EU Directive for aggregates planning, the EU's environmental Directives and conventions have had a significant influence and impact on the national planning policy framework which applies in GB.^{33,34}

²⁸ British Geological Survey: *Managing aggregates supply in England, A review of the current system and future options*, 2008, Section 4.4.

²⁹ In the context of aggregates planning, a 'landbank' is defined as a stock of planning permissions (as measured in years) for permitted reserves to ensure continuity of aggregates production for a set number of years based on current extraction rates: www.bgs.ac.uk/Planning4Minerals/Glossary.htm#landbank.

³⁰ www.communities.gov.uk/planningandbuilding/planningbuilding/planningresearch/researchreports/mineralswasteresearch/aggregateworkingparties/.

³¹ The National Co-ordination Group is chaired by the DCLG and includes the chairs and secretaries from the AWP as well as industry trade associations and other government departments. It also includes AWP chairs and secretaries from Wales, and the National Assembly for Wales.

³² www.bgs.ac.uk/Planning4Minerals/EU_Influence_1.htm.

³³ www.bgs.ac.uk/Planning4Minerals/EU_Influence_1.htm.

- 2.30 In particular, a number of main and third parties highlighted the EU Environmental Impact Assessment (EIA) Directive, whose implementation is the responsibility of the individual LMPAs. The EIA Directive requires developers of larger minerals development sites, and of sites expected to have a significant environmental impact, to provide an 'Environmental Statement' to the LMPA, which contains an assessment of the likely environmental effects arising from the proposed development.³⁵ Further details of the EIA Directive and parties' views about it may be found in Appendix 2.1.

Marine aggregates and the licensing regimes for the dredging of marine aggregates

- 2.31 The activity of extracting marine aggregates from the seabed is referred to as 'aggregates dredging'. Marine aggregates account for around 20 per cent of the total supply of sand and gravel in England and Wales.³⁶
- 2.32 Dredging is carried out by a dredging vessel (dredger) which can either operate while stationary (anchored during dredging) or while in motion by towing a 'drag head'.³⁷ Each dredger transports marine aggregates from dredge sites direct to the marine wharves, which are typically located close to the point of end-use.³⁸
- 2.33 A marine wharf is used to land marine aggregates which have been dredged. Wharves require a quay, a discharge area and typically a processing plant to screen the aggregates and remove impurities. In some cases, an RMX plant might also be co-located at a wharf. The construction of a marine wharf requires planning permission from the LMPA, with most wharves located in the Thames Estuary, the South Coast, the Bristol Channel, and the north-east coast of England. There are also wharves in the North-West of England and North Wales.
- 2.34 Various licences and other permissions are required in order to engage in aggregates dredging within UK waters:
- (a) Before making an application for permission to dredge in a particular area of the seabed, a marine aggregates producer must first be awarded exploration and option rights by The Crown Estate through a tender process.³⁹
 - (b) A Marine Licence (effectively an environmental consent)⁴⁰ is required to carry out dredging within UK waters.⁴¹ A Marine Licence permits dredging in a particular area of the seabed. Three Marine Licensing Authorities are responsible for granting Marine Licences to marine aggregates producers.⁴² In some cases, a Marine Licence may be required if a British vessel operates outside UK territorial waters.

³⁴ The Department for Environment, Food and Rural Affairs (Defra) is the government body responsible for setting the majority of environmental policies and regulations for the whole of the UK, and it has streamlined the EU's environmental Directives to create an environmental 'permitting' regime in England which governs how sites are operated. In Wales, this is a matter for the environment directorate within the Welsh Government, and in Scotland, the Scottish Government is responsible for transposing EU law into domestic legislation.

³⁵ www.bgs.ac.uk/mineralsuk/planning/legislation/home.html.

³⁶ MPA website (www.mineralproducts.org/iss_key01.htm#).

³⁷ www.sustainableaggregates.com/overview/policy_extended.htm. Hanson told us that no UK registered dredging vessels had capacity exceeding 8 kilotonnes (kt) of marine aggregates, and that the average cargo capacity of its own marine fleet was around 4 kt per dredger (ranging from 1.2 to 8 kt).

³⁸ *Marine Aggregate Dredging: Helping to determine good practice*, September 2006. See also previous footnote.

³⁹ MPA website: www.mineralproducts.org/documents/brochure.pdf.

⁴⁰ www.bmapa.org/what_licence01.php.

⁴¹ www.marinemangement.org.uk/licensing/documents/guidance/03.pdf.

⁴² www.marinemangement.org.uk/licensing/documents/guidance/03.pdf.

(c) Once a Marine Licence has been granted, the marine aggregates producer can only commence dredging operations once it also receives a commercial dredging licence, also known as a 'Production Agreement', from The Crown Estate.⁴³

2.35 Further details of the licensing regimes for the dredging of marine aggregates may be found in Appendix 2.1

Secondary and recycled aggregates and the applicable planning regimes

2.36 Unprocessed feedstock for secondary and recycled aggregates is classified as 'waste' and therefore the sites which process the feedstock into aggregates operate under waste management regulations which are enforced by the Environment Agency (EA). Once processed, secondary and recycled aggregates are no longer classified as 'waste', and are regulated by the applicable planning permission.⁴⁴ In addition, the supply of feedstock for secondary and recycled aggregates is also affected by the 'Landfill Tax', which provides a financial incentive to waste producers to recycle more of their waste materials, rather than disposing of them in landfills. The Landfill Tax is levied on waste producers for each tonne of waste disposed of in landfills.⁴⁵

2.37 The waste materials that constitute the feedstock for the production of recycled materials must be processed, eg crushed and screened, to produce the final product, using either a mobile or fixed recycling plant.⁴⁶ Fixed recycling plants are generally situated in industrial areas or co-located at a primary aggregates site. Fixed recycling plants require both a planning permission and an environmental permit, whilst a mobile recycling plant requires an environmental permit depending on the category of the plant.⁴⁷ Further details of the licensing regimes for secondary and recycled aggregates may be found in Appendix 2.1.

The aggregates levy

2.38 On 1 April 2002, the Government introduced a levy on sand, gravel and rock that were 'commercially exploited' in the UK (the aggregates levy). HM Treasury told us that the aggregates levy was aimed at:

(a) internalizing some of the externalities from quarrying, such as dust, noise, visual intrusion and loss of biodiversity; and

(b) introducing a price incentive to encourage the use of waste, spoil and recycled aggregates by relieving them from the aggregates levy.⁴⁸ In other words, the aggregates levy is not payable on waste, spoil and recycled aggregates.

2.39 HM Treasury told us that the aggregates levy charge arose when aggregates became subject to 'commercial exploitation'⁴⁹ and that it was payable by the person

⁴³ www.marinemanagement.org.uk/licensing/documents/guidance/03.pdf.

⁴⁴ www.sustainableaggregates.com/sourcesofaggregates/recycled/rib_operation.htm.

⁴⁵ The standard rate is currently £72 per tonne for 2013/14, which will increase to £80 for 2014/15. A lower rate applies (£2.50 per tonne) for the use of waste for filling or restoring quarries. Source:

http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageExcise_ShowContent&id=HMCE_CL_000509&propertyType=document#P144_17340. Whilst the feedstock that goes into secondary and recycled aggregates is defined as 'waste' for the EA's purposes, it is not 'waste' for the purposes of the Landfill Tax until it is disposed of in landfills: www.businesslink.gov.uk/bdotg/action/detail?itemId=1085288287&type=RESOURCES#.

⁴⁶ www.sustainableaggregates.com/sourcesofaggregates/recycled/rib_introduction.htm.

⁴⁷ www.sustainableaggregates.com/sourcesofaggregates/recycled/rib_operation.htm.

⁴⁸ www.sustainableaggregates.com/overview/policy_extended.htm.

⁴⁹ A quantity of aggregates is subjected to 'exploitation' if: (a) it is removed from: its originating site; a connected site registered under the same name; or a site where it was intended to be subject to an exempt process but in fact was not; (b) it is subject to

responsible for subjecting the aggregates to ‘commercial exploitation’ rather than the user (although the amount of levy payable might be taken into account in the producer’s selling price). The aggregates levy is also incurred on imported primary aggregates when they are first ‘commercially exploited in the UK’ and not when they are imported. To maintain the international competitiveness of UK primary aggregates, the aggregates levy is not payable on UK aggregates which are exported.⁵⁰

- 2.40 The aggregates levy was set at £1.60 per tonne when the levy was introduced on 1 April 2002, and increased to £1.95 per tonne on 1 April 2008 and £2.00 per tonne on 1 April 2009. HM Treasury told us that these increases were intended to reflect inflation, and that a further planned increase to £2.10 per tonne had been deferred. At the time of writing in 2013, the aggregates levy remained £2.00 per tonne. Annual tax revenues generated from the aggregates levy are around £300–£350 million.⁵¹
- 2.41 Further details of the operation of the aggregates levy and the views of some main parties may be found in Appendix 2.1.

Cement

- 2.42 The following paragraphs cover:
- (a) the different types of cement and how they are produced;
 - (b) how total GB demand for cement has varied over the last ten years;
 - (c) the EU ETS for CO₂ emissions;
 - (d) the UK Carbon Reduction Commitment Energy Efficiency Scheme;
 - (e) the UK Climate Change Agreements (CCAg); and
 - (f) the UK Climate Change Levy (CCL).
- 2.43 We return to items (c) to (f) in Section 7 (as part of our competitive assessment of the supply of cement in GB) and Section 11 (as part of our assessment of the impact on competition of policy and regulation). Where necessary, further details are provided in Appendix 2.2.

Description of products

- 2.44 Cement is the ‘glue’ that binds together the components of building materials. Among other uses, cement is mixed with aggregates and water to produce RMX. Cement is made from a mixture of finely ground limestone or chalk (or other materials with a high calcium content), clay and sand (or other sources of silica and alumina). This mixture is heated almost to melting point (around 1,450°C) in a large rotating kiln, creating an intermediate product, cement clinker, which has specific chemical proportions of lime, alumina, silica and iron. The finished cement is produced by grinding together around 95 per cent cement clinker with 5 per cent additives including

an agreement to supply, ie it was sold; (c) it is used for construction purposes, eg to build roads; or (d) it is mixed with anything other than water, eg to make concrete.

⁵⁰ www.bgs.ac.uk/mineralsuk/planning/legislation/home.html.

⁵¹ www.sustainableaggregates.com/overview/policy_extended.htm.

gypsum⁵² to produce a fine powder. When cement is mixed with water, the hydration of calcium silicates and aluminates causes the cement to set.

- 2.45 Cement may be grey or white in colour. White cement is similar to grey cement in many respects except for its colour. Obtaining this colour requires substantial modification to the method of manufacture, and because of this, it is considerably more expensive than the grey product. White cement is not produced in the UK, and previously has not been considered part of the same relevant product market as grey cement.⁵³ Throughout this report, we use the term 'cement' to refer to grey cement only.
- 2.46 As well as being an input into RMX, cement is an input into (among other building products) the production of concrete and concrete products. Concrete products include concrete blocks and precast concrete products.⁵⁴
- 2.47 Cement is supplied in bulk or bagged. Bagging can take place either at a cement production plant, or at a depot or import terminal, where facilities exist. Bulk cement may reach the customer by bulk road tanker or very rarely by bulk rail tanker. Bagged cement is distributed to customers using ordinary lorries.
- 2.48 Figure 2.2 shows the locations of the Majors' operational cement plants (including grinding/blending plants, and grinding, packing and distribution plants) in the UK as at 2012. Over the period 2007 to 2011, there were two further cement plants in operation: Cemex's Barrington in Cambridgeshire (closed in 2008) and Lafarge's Northfleet just to the east of Greater London (closed in 2008). Several kilns have also been mothballed over this period ([~~§~~]), but this did not change the geographical footprint of the Majors' cement operations.

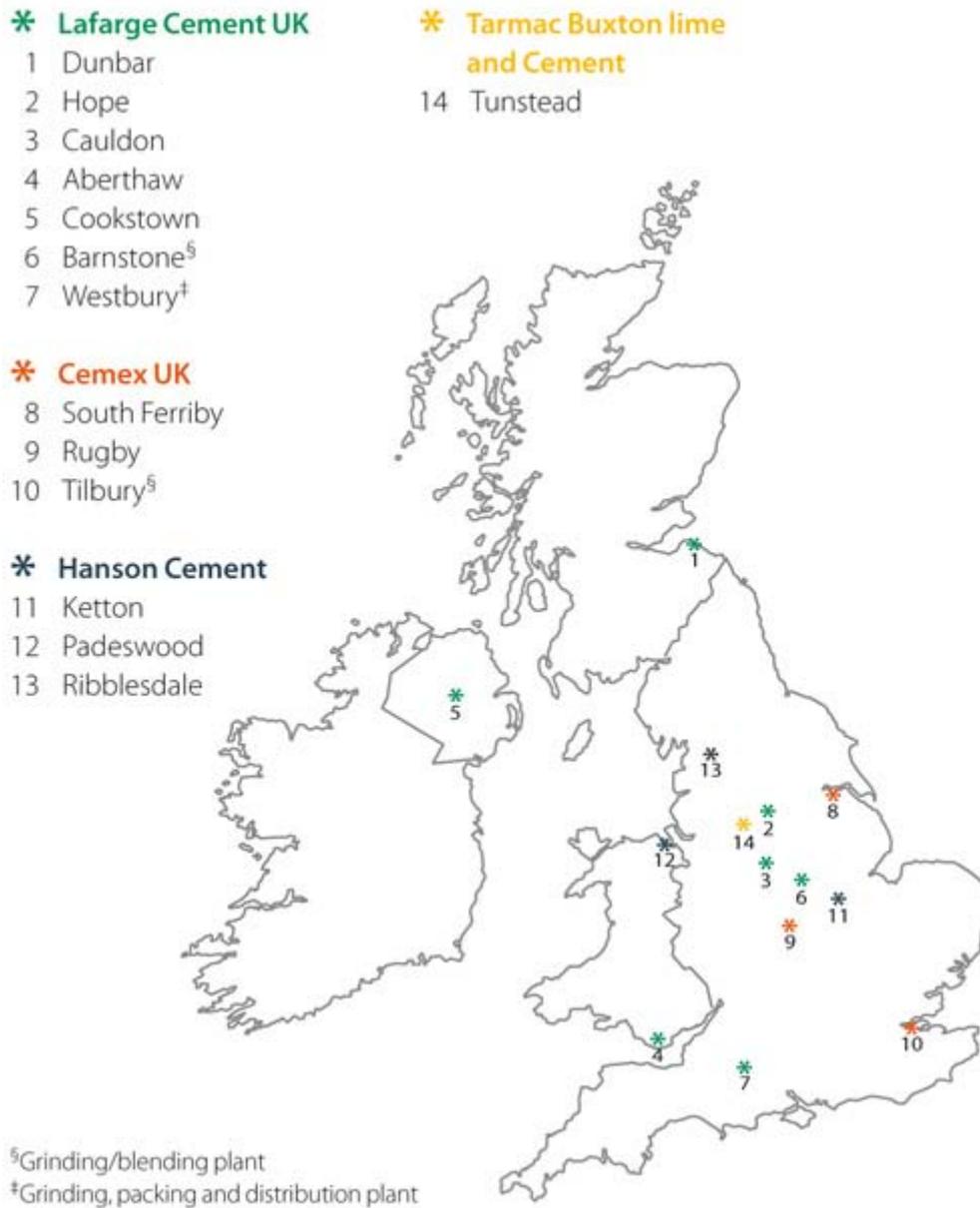
⁵² A very soft mineral composed of calcium sulphate dihydrate. The addition of gypsum helps to control the time taken for the cement to harden when water is added. Anhydrite (anhydrous calcium sulphate) may also be used.

⁵³ See the OFT's decision in Lafarge Cement UK/Port Land Cement Company Ltd, 2005.

⁵⁴ Concrete blocks are prefabricated building blocks made out of concrete. Precast concrete products are concrete structures produced by casting concrete in a reusable mould or form which is then cured in a controlled environment and transported to a specific construction site to be lifted into place.

FIGURE 2.2

Map of the Majors' cement plants in the UK, 2012



Source: [MPA website](#).

Cementitious products

2.49 Different types of cement are produced by blending ground clinker with other materials. In this report, we refer to these materials collectively as 'cementitious products'.⁵⁵ The materials include:

- (a) *GGBS*, a by-product of the blast furnaces used to make iron (which is part of the steel-making process). Paragraph 7.254 describes the companies involved in

⁵⁵ We use the term 'cementitious products' for ease of reference in this report, although these materials vary in the extent to which they are cementitious (which refers to being capable of a hydraulic reaction with water to form a solid crystalline structure).

GGBS production in GB. GGBS is a cementitious material, which means that it is (like ground clinker) capable of a hydraulic reaction with water to form a solid crystalline structure. On its own it would develop strength extremely slowly. It is normally blended with ground clinker to produce a product that strengthens more quickly (albeit not as quickly as ground clinker on its own). Performance of concretes manufactured using clinker and GGBS is normally consistent and predictable.

- (b) *PFA*, a by-product of pulverized fuel (typically coal)-fired power stations. Appendix 5.3, paragraph 3, describes the companies involved in PFA production in GB. It consists of very fine particles of silica. PFA is a pozzolanic material, which means that it is capable of reactions to form solid crystalline structures (as for a cementitious material) but only in the presence of an alkaline environment. PFA is more variable in its properties and ‘compatibility’⁵⁶ with different cements than GGBS.
- (c) *Limestone*, which has almost no cementitious properties, but it is used (a) in the production of the cement clinker itself; (b) as a minor additional constituent in the production of all cement types, when clinker is ground to produce cement; and (c) as an additive in the production of blended limestone cement, in which it is used to replace some clinker.

2.50 Cement types (also known as blended cements) are defined by strength development and setting times, which are determined by the proportions and nature of the different raw cementitious products used to make that particular cement type, as shown in Table 2.1. CEM I is the basic, and the most widely produced, cement in GB. CEM II and CEM III are the other two main types of cement supplied in the UK.

TABLE 2.1 Types of cement for concrete (BS EN 197-1) and typical uses

Type	Ingredients	Typical uses
CEM I	Clinker and up to 5% additives	RMX; precast concrete; as a base for formulated products, eg grouts cement-based floor and tile adhesives; mortars and screeds; and site-mixed concrete
CEM II	Clinker and between 6% and 35% other single constituents, eg PFA, GGBS, limestone	RMX; general concreting; ground engineering; and soil stabilization
CEM III	Clinker and >35% GGBS	RMX
CEM IV	Clinker and >35% pozzolana/PFA	
CEM V	Clinker and >35% GGBS and pozzolana/PFA	

Source: British Geological Survey (2005), [Mineral Profile: Cement Raw Materials](#) and Anglo American.

2.51 Blended cements are produced because they tend to be cheaper than CEM I, because they have a lower carbon footprint⁵⁷ and because they can impart certain beneficial characteristics to the cement (such as sulphate resistance).

2.52 Any cement works which has milling, blending and storage facilities for additives can produce different types of cement. As an alternative to buying bulk CEM II and CEM III, which are blended at the production site, some customers may buy CEM I and additives, such as GGBS or PFA, separately and mix these directly at their own sites

⁵⁶ The chemistry of the cement can be varied to increase its compatibility with PFA.

⁵⁷ Clinker manufacture is very energy intensive, and generates around 0.8 tonnes of CO₂ for each tonne of clinker produced, including the energy derived from the fuels used to heat the kiln. Therefore the clinker content of cement is a key factor driving its cost and its CO₂ emissions profile. Blended cements are also known as ‘low carbon cements’.

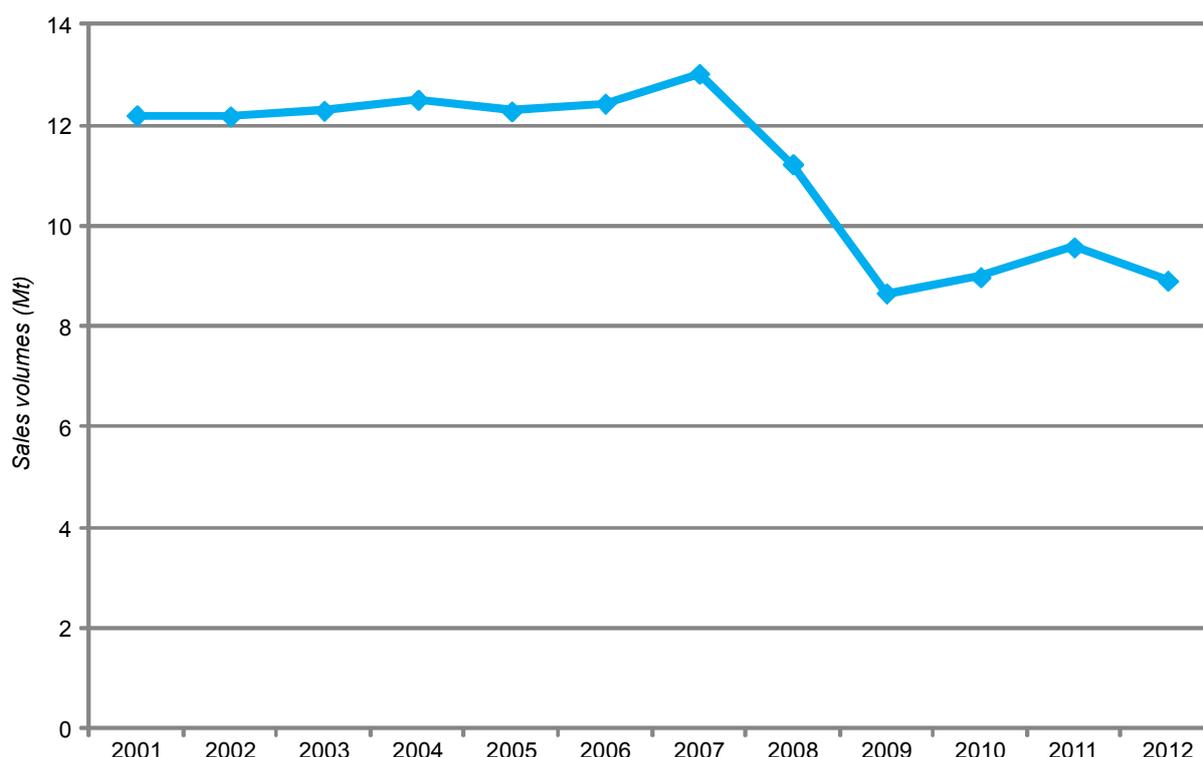
(either using their own blending and storage facilities, or by using their RMX plants to mix together the required quantities of materials to produce the RMX specification desired).

Demand for cement in GB

2.53 Figure 2.3 shows total GB cement sales over the period 2001 to 2012. A significant downturn in sales (a decline of 36 per cent) over the period 2007 to 2009 can be seen, coinciding with the UK recession.

FIGURE 2.3

GB cement sales



Source: MPA.

EU Emissions Trading Scheme

2.54 The EU ETS is a 'cap-and-trade' system of pollution control designed to limit and reduce the greenhouse gas emissions (principally carbon dioxide) produced by member states' energy-intensive industry sectors and electricity generators (ETS sectors), including the production of cement clinker,⁵⁸ where carbon emissions are both a by-product of the chemical process by which clinker is created and the result of the burning of fossil fuels during the production process.⁵⁹ The ETS covers around

⁵⁸ The ETS covers the electricity generation and major energy-intensive sectors, including power stations, iron and steel, clinker and lime, and certain other activities with a high emissions potential. Clinker is used in the manufacture of cement. Source: www.gov.uk/government/policies/reducing-the-uk-s-greenhouse-gas-emissions-by-80-by-2050/supporting-pages/eu-emissions-trading-system-eu-et. ETS sector coverage has gradually increased to include other sectors, such as gypsum and integrated steelworks, under ETS Phase II. Source: www.gov.uk/participating-in-the-eu-ets#eu-ets-phase-ii-2008-to-2012. Since 2012 it has also applied to aviation.

⁵⁹ www.ipcc-nggip.iges.or.jp/public/gp/bgp/3_1_Cement_Production.pdf.

40 per cent of the EU's total greenhouse gas emissions and around half of its total carbon emissions.⁶⁰

- 2.55 The ETS currently operates in 31 countries (in all 28 EU member states and, since the start of 2008, in all three EEA-EFTA (European Economic Area European Free Trade Association) states, namely Iceland, Liechtenstein and Norway. The ETS formed one of the EU's key policies for meeting its commitment under the 1997 Kyoto Protocol to reduce its greenhouse gas⁶¹ emissions to 8 per cent below 1990 levels by the end of the first Kyoto Protocol commitment period (2008 to 2012).⁶²
- 2.56 Following the introduction of the EU Emissions Trading Directive in 2003,⁶³ the ETS commenced the first of its 'trading phases' (ETS Phase I),⁶⁴ which lasted from 1 January 2005 to 31 December 2007. The second trading phase (ETS Phase II) commenced on 1 January 2008 and ended on 31 December 2012. The ETS is currently in its third trading phase (ETS Phase III), which commenced on 1 January 2013 and will end on 31 December 2020.⁶⁵ By the end of ETS Phase III, overall carbon emissions from ETS installations are expected to reduce to 21 per cent below 2005 levels.⁶⁶ The ETS will continue to operate beyond 2020.
- 2.57 Each member state is responsible for administering the ETS for its own ETS sectors. In the UK, this responsibility is discharged by the Department of Energy and Climate Change (DECC) and the three devolved administrations, namely the respective Governments of Scotland, Wales and Northern Ireland, together with the corresponding environmental agencies.⁶⁷
- 2.58 Prior to the commencement of each of ETS Phases I and II, each member state was responsible for publishing its 'National Allocation Plan', a document which set out: (a) a national 'cap' on the total amount of 'EU Allowances' or 'EUAs' (carbon allowances) during each relevant trading phase;⁶⁸ and (b) the methodology by which the cap would be allocated to the different ETS sectors and their individual installations.⁶⁹ Each member state's cap contributed to an overall EU cap on carbon emissions, where one carbon allowance must be surrendered to account for 1 tonne of carbon emitted. These carbon allowances, which were available free, were then distributed by each member state to its ETS installations. A proportion of the carbon allowances were also placed in a 'New Entrant Reserve' (NER) and some were available for auctioning by the member state.⁷⁰ Further details on the NER are set out in Appendix 2.2.
- 2.59 Under ETS Phase III, many of these decisions are now determined at an EU level,⁷¹ and the system of National Allocation Plans has been replaced by a centralized EU-wide cap on carbon emissions, with allocations for all installations made according to harmonized EU rules and set out in each member state's 'National Implementation

⁶⁰ www.environment-agency.gov.uk/business/topics/pollution/141019.aspx.

⁶¹ The EU Emissions Trading Directive potentially covers the six greenhouse gases (including carbon dioxide, which is the principal greenhouse gas) which were included in Annex A to the Kyoto Protocol http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php. In practice, however, the ETS currently applies only to carbon dioxide, nitrous oxide and perfluorocarbons.

⁶² www.environment-agency.gov.uk/business/topics/pollution/32232.aspx.

⁶³ www.gov.uk/eu-ets-legislation-and-research-publications.

⁶⁴ http://ec.europa.eu/clima/policies/ets/allocation/index_en.htm.

⁶⁵ http://ec.europa.eu/clima/policies/ets/index_en.htm.

⁶⁶ http://ec.europa.eu/clima/policies/package/index_en.htm.

⁶⁷ See www.legislation.gov.uk/2012/3038 to the Greenhouse Gas Emissions Trading Scheme Regulations 2012 (SI 2012/ 3038).

⁶⁸ www.environment-agency.gov.uk/business/topics/pollution/141019.aspx.

⁶⁹ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

⁷⁰ www.environment-agency.gov.uk/business/topics/pollution/141025.aspx.

⁷¹ www.decc.gov.uk/assets/decc/What%20we%20do/Global%20climate%20change%20and%20energy/Tackling%20Climate%20Change/Emissions%20Trading/eu_ets/phase%20iii/1016-euets-preparing-phase-III.pdf.

Measures'.⁷² The EU-wide cap for the start of ETS Phase III was set at around 2 billion tonnes of carbon emissions (or 2 gigatonnes (Gt) CO₂),⁷³ which will decline linearly each year, such that by 2020 the EU would deliver an overall reduction of its carbon emissions to 21 per cent below 2005 levels, with a cap of around 1.7 billion tonnes of carbon emissions (1.7 Gt CO₂).⁷⁴

2.60 ETS Phase III has brought about the following major changes to the system compared with ETS Phases I and II:

(a) *Product benchmarking approach.* Under ETS Phase III, carbon allowances are either auctioned or distributed free of charge. In relation to the latter, each eligible installation receives its free allocation based on a combination of its historic activity levels and an EU 'benchmark' of 'carbon efficiency' for the production of a particular product, eg clinker. This represents a move away from the previous 'grandfathering' approach adopted under ETS Phases I and II.

(b) *Carbon leakage.* Certain sectors and subsectors which are deemed by the European Commission to be at 'significant risk' of 'carbon leakage',⁷⁵ including cement production, will continue to receive 100 per cent of their benchmark allocations free during 2013 and 2014; those sectors and subsectors not considered at risk will receive 80 per cent of their benchmark allocation in 2013, declining to 30 per cent by 2020. In 2014 and 2019, the list of sectors and subsectors deemed to be at 'significant risk' of carbon leakage will be reviewed. At these review points, sectors and subsectors can be added to or removed from the list depending on whether the sector or subsector meets the criteria and thresholds set in the ETS Directive.

(c) *Auction process.* Carbon allowances which are not freely distributed will be auctioned, including 100 per cent auctioning to the power sector in the UK.⁷⁶ During the course of ETS Phase III, the proportion of carbon allowances which will be auctioned will increase marginally, with the result that marginally fewer carbon allowances will be distributed free of charge.

(d) *Small emitter exemptions.* An opt-out clause for 'small emitters' and hospitals from ETS Phase III.

(e) *New entrant reserve (NER) and carbon allowances for new entrants.* Under ETS Phase III, 5 per cent of all free carbon allowances has been set aside in an NER for new installations, including capacity extensions to existing plants, which commence operations after 30 June 2011.⁷⁷ If the NER is exhausted, new installations will be required to purchase any carbon allowances they require.⁷⁸

2.61 Further details of the EU ETS, including the views of main and third parties, can be found in Appendix 2.2.

⁷² <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:FULL:EN:PDF>.

⁷³ http://ec.europa.eu/clima/policies/ets/cap/index_en.htm.

⁷⁴ http://webarchive.nationalarchives.gov.uk/20121025080026/http://www.decc.gov.uk/en/content/cms/emissions/eu_ets/phase_iii/phase_iii.aspx.

⁷⁵ The European Commission describes 'carbon leakage' as the prospect of an increase in global greenhouse gas emissions when companies shift production outside the EU because they cannot pass on the cost increases induced by the ETS to their customers without significant loss of market share. Source:

[http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012XC0605\(01\):EN:NOT](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012XC0605(01):EN:NOT).

⁷⁶ Article 10 of ETS Directive 2003/87/EC:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2003L0087:20090625:EN:PDF>.

⁷⁷ DECC initial submission, 10 April 2012.

⁷⁸ [Hanson response to the issues statement](#), Section 12, fn 105.

The Carbon Reduction Commitment Energy Efficiency Scheme

- 2.62 The Carbon Reduction Commitment (CRC) is a government scheme which started in April 2010⁷⁹ to improve energy efficiency for large organizations whose electricity consumption exceeds 6,000 MWh.⁸⁰ The CRC scheme is split into phases: the first phase lasts from 1 April 2010 to 31 March 2014, whilst the second phase will last from 1 April 2014 to 31 March 2019. There are four further phases, each lasting five years, with a final phase of four years starting in April 2039.
- 2.63 The CRC does not apply to those carbon emissions that are already covered by the ETS,⁸¹ and therefore excludes cement producers in the UK. However, the CRC does cover large aggregates sites. Cemex told us that only an operator which extracted more than around 1 Mt of aggregates each year would be likely to exceed this energy consumption threshold and be covered by the CRC.⁸² Tarmac noted that the CRC covered 'non-residual fuel sources for all operations within a qualifying organization', and therefore Cemex's example would 'only hold true for a standalone operation'. Tarmac added that there was 'no de-minimis consumption threshold within a registered participant and so carbon consumption at all operations, even the smallest aggregates sites, must be declared and, unless exempt, will contribute to the requirements to purchase allowances'.
- 2.64 The CRC operates as a UK-wide 'emissions trading' scheme and requires each participating organization to:
- (a) report its energy consumption to the EA, which is then converted into carbon emissions;⁸³ and
 - (b) purchase allowances from the Government to cover its emissions for the previous year.⁸⁴ In the first year of the scheme, there was no requirement for participants to buy allowances.⁸⁵ However, purchases of allowances must be made for emissions generated in the second year of the scheme (from April 2011 to March 2012),⁸⁶ for which period the price for an allowance was £12 per tonne of carbon emitted.⁸⁷ The allowance price of £12 remains unchanged through to 2013/14, but will rise to £16 in 2014/15, and from 2015/16 onwards will increase in line with the retail price index.
- 2.65 Each organization's energy efficiency performance is then published and ranked in a league table.⁸⁸ In its 2012 Autumn Statement, the Government stated that it would simplify the CRC from 2013 in order to provide 'significant administrative savings for businesses in the scheme'. It proposed that the CRC league table would be abolished, a full review of the effectiveness of the CRC would be held in 2016 and that 'when public finances allow', the tax would be a 'high priority for removal'.⁸⁹ Following approval by Parliament and the devolved legislatures, the CRC Energy Efficiency Scheme Order 2013 came into force on 20 May 2013, which would see the simplifi-

⁷⁹ MPA, *Policy Briefing: Energy Carbon Taxes and Market Mechanisms*, August 2011.

⁸⁰ DECC initial submission, 10 April 2012.

⁸¹ MPA, *Policy Briefing: Energy Carbon Taxes and Market Mechanisms*, August 2011.

⁸² Cemex response to the issues statement, 24 April 2012, Section 8.

⁸³ DECC initial submission, 10 April 2012.

⁸⁴ DECC initial submission, 10 April 2012.

⁸⁵ Cemex response to the issues statement, 24 April 2012, Section 8.

⁸⁶ Cemex response to the issues statement, 24 April 2012, Section 8.

⁸⁷ DECC initial submission, 10 April 2012.

⁸⁸ DECC initial submission, 10 April 2012.

⁸⁹ The Government's 2012 Autumn Statement, paragraph 1.127:

http://cdn.hm-treasury.gov.uk/autumn_statement_2012_complete.pdf.

cation of the CRC. The majority of the changes set out in this Order will be introduced in 2014/15, ie from the beginning of the second phase of the CRC scheme.

- 2.66 In relation to compliance costs, DECC told us that CRC participants incurred administrative costs (eg through reporting) and the cost of purchasing allowances.⁹⁰ Cemex told us that the cost of purchasing allowances was considerable, and estimated that had Cemex been required to pay for allowances in the first year of the CRC, it would have paid around £2 million, based on its total carbon emissions of around 176 kt at an assumed carbon price of £12 per tonne (the applicable price for the second year of the CRC). Cemex estimated that it would spend a similar amount on allowances for the 12 months to March 2012.⁹¹

UK Climate Change Agreements

- 2.67 A CCAg is a voluntary agreement entered into with the Government by a sector. Under a sector 'umbrella agreement', any operator (that meets the eligibility criteria) in certain energy-intensive industries can enter the sector agreement. Participation in a sector CCAg by an operator requires the operator to have an 'underlying' CCAg with the Government. The CCAg scheme is currently set to run until 2023.
- 2.68 The cement/clinker, slag grinding (eg GGBS) and lime production sectors have all entered into CCAgs with the Government.
- 2.69 A CCAg sets out agreed targets for improvements in the operator's energy efficiency. Once these targets are met, the operator will benefit from a discount on its climate change levy (CCL) (see paragraph 2.72) of up to 65 per cent from April 2011 (prior to which the discount was 80 per cent). The Government announced in its 2011 Autumn Statement that the discount for electricity would be increased to 90 per cent from April 2013. From 1 April 2013, the main rate of CCL on electricity was 0.524p per kilowatt hour (kWh) (0.541p per kWh from 1 April 2014). For holders of a CCAg, the main rate of CCL was reduced by 90 per cent for 2013/14.

Overlaps between CRC and CCAgs

- 2.70 There are certain overlaps between the CRC and CCAgs such that if over 25 per cent of an organization's emissions are covered by a CCAg, it will be exempt from certain aspects of the CRC, including the requirement to purchase allowances.⁹² This is known as a 'CCA exemption' to the CRC.
- 2.71 As explained in paragraph 2.68, CCAgs cover (among other sectors) the cement, GGBS and lime producers. Aggregates producers are, however, not covered by a CCAg. DECC told us that this could result in 'differential impacts' within the regulated sector, such that an integrated aggregates and cement producer which had a CCAg would be exempt from the CRC, but a stand-alone aggregates company would have to comply with the CRC in full. DECC told us that it was currently in the process of simplifying the CRC, including changes to the current 'CCA exemption' rules,⁹³ with the possibility that the CRC could be replaced by another form of environmental tax.⁹⁴ In the Government's response dated December 2012 following its 'Consultation

⁹⁰ DECC initial submission, 10 April 2012.

⁹¹ Cemex response to the issues statement, 24 April 2012, Section 8.

⁹² DECC initial submission, 10 April 2012.

⁹³ *ibid.*

⁹⁴ Cemex response to the issues statement, 24 April 2012, Section 8.

on simplifying the CRC Energy Efficiency Scheme,⁹⁵ it was stated that ‘Government intends to implement the proposal to disapply the CRC Energy Efficiency Scheme supply rules to CCA facilities and EU ETS installations and to remove the three CCA exemptions from the scheme’. Our consideration of the impact of the CCA exemptions on competition is set out in paragraphs 11.38 and 11.39.

Climate Change Levy

2.72 The CCL was introduced to help the UK meet its national commitment under the Kyoto Protocol, and is a levy on the use of energy in industry, commerce and the public sector, where power consumption exceeds 2,000 kWh. The CCL is collected by the electricity supplier.

RMX

2.73 The following paragraphs include:

- (a) a description of RMX and related products; and
- (b) a chart showing how GB demand for RMX has varied over the last ten years.⁹⁶

Description of products

2.74 RMX is concrete that is produced in a freshly mixed and unhardened state. RMX is manufactured by mixing highly specific quantities of cement and (if desired) other cementitious products with fine aggregates and coarse aggregates, water and other additives. The specific composition (and resulting properties) of RMX can be customized to suit different applications.

2.75 RMX can be produced (a) in a fixed plant and distributed to site by a concrete mixer; (b) in a mobile plant at (or near) the customer site (also known as a ‘site plant’); or (c) in a volumetric truck which carries the ingredients separately and mixes them on-site (also known as ‘on-site batching’). Approximately 86 per cent of RMX is mixed at a dedicated plant then delivered to the customer’s site, 9 per cent is supplied by volumetric trucks and 5 per cent is mixed at site plants (and supplied to the same site).⁹⁷

2.76 Value-added RMX products (RMX VAPs) can be made by using additives and/or special production processes to develop particular properties for use in specialist applications. Examples include self-compacting RMX, coloured RMX, fast-setting RMX and waterproof RMX.

Demand for RMX in GB

2.77 Figure 2.4 shows total GB RMX production over the period 2002 to 2012. A significant downturn in production (a decline of 39 per cent) over the period 2007 to 2009 can be seen, coinciding with the UK recession.

⁹⁵ Proposal 17, paragraph 95 of ‘Consultation on simplifying the CRC Energy Efficiency Scheme – Government Response’ (December 2012):

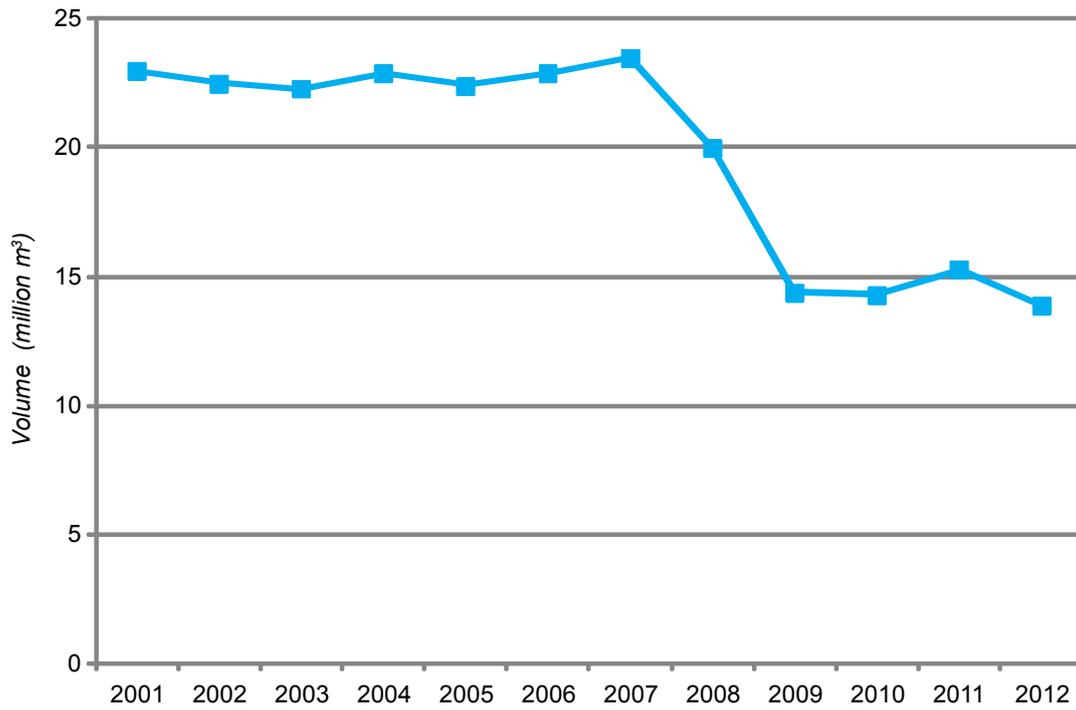
www.gov.uk/government/uploads/system/uploads/attachment_data/file/68946/Consultation_on_Simplifying_the_CRC_Energy_Efficiency_Scheme_-_Government_Response.pdf

⁹⁶ There were no regulations or public policies related to RMX (over and above those already discussed in the context of cement and aggregates) which we considered to be relevant to our competitive assessment for RMX.

⁹⁷ CC calculations based on BDS Marketing Research Ltd (BDS) 2010 data.

FIGURE 2.4

GB RMX production



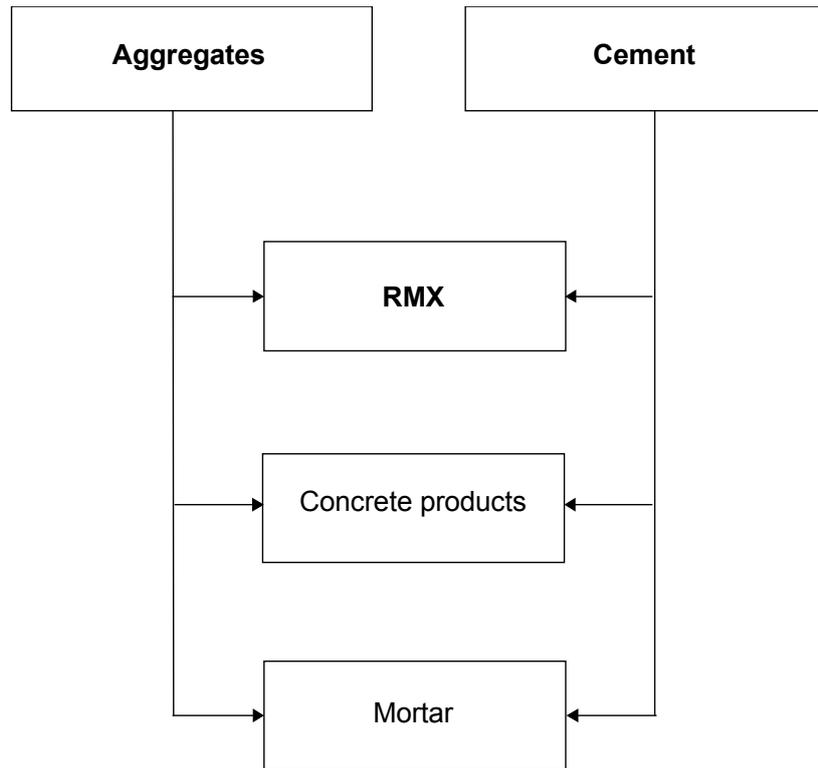
Source: MPA (February 2013).

Input relationships between aggregates, cement and RMX and extent of vertical integration

2.78 Figure 2.5 summarizes the input relationships between aggregates, cement and RMX, as well as showing for reference other products made from aggregates and cement.

FIGURE 2.5

Input relationships between products



Source: CC.

Note: Reference products are shown in bold.

- 2.79 There is considerable vertical integration in the industry, and this has increased over recent years. Significant proportions of the cement produced by each GB producer (ranging from around 14 per cent to around 62 per cent in 2011), and of the aggregates produced by each Major (ranging from 33 to 49 per cent in 2011), are used in their own downstream operations. However, their downstream operations are not completely self-supplied: cement and aggregates are also purchased externally.⁹⁸
- 2.80 Some independent aggregates producers are also vertically integrated to varying degrees into RMX, concrete products and asphalt production: see Section 3.

⁹⁸ Further details of the extent of internal sales and purchases of cement and aggregates are in Appendix 2.3.

3. Construction materials companies

Introduction

- 3.1 In this section, we set out brief profiles of a selection of construction materials companies operating in GB (further details can be found in Appendix 3.1). These companies account for a combined 80 per cent share of supply aggregates, 99 per cent share of supply of cement and 71 per cent share of supply of RMX in GB.¹ The section is structured as follows:
- (a) We first provide background information on the Majors (ie the five largest heavy building materials producers in GB) as they stood immediately prior to 7 January 2013, namely Aggregate Industries, Cemex, Hanson, Lafarge and Tarmac. We also set out short profiles of Lafarge Tarmac and HCM, two new entities which came into being on 7 January 2013 as a result of the Anglo–Lafarge JV and the implementation of the remedies required by the CC to allow that JV to proceed (see paragraph 3.34). From that date, the Majors became Aggregate Industries, Cemex, Hanson, HCM and Lafarge Tarmac. Appendix 3.2 contains a timeline showing the involvement of the parent companies of the Majors in the GB construction materials industry from 1990 to the present day.
- (b) We then set out background information on ten medium-tier independent operators² (medium-tier independents) engaged in one, or a combination, of the following activities: the production of aggregates or RMX in GB, or the importation of cement into GB.
- 3.2 Throughout this section, we refer to parties' activities in connection with the supply or acquisition of aggregates, cement and RMX in GB, as defined by the OFT's terms of reference of 18 January 2012, as the 'relevant GB operations'.
- 3.3 Some of the Majors produce cementitious products (eg GGBS or PFA), which are consumed in the production of blended cements (ie CEM II, CEM III and CEM IV) or in the production of certain downstream products (eg RMX and concrete products). In relation to their production of cementitious products (where applicable), this is undertaken either through wholly-owned operations (eg Hanson in the case of GGBS), or through contractual or JV arrangements (eg the ProAsh JV between Lafarge and Cemex in the case of PFA). When defining the scope of the 'relevant GB operations', we accounted for firms' production, sale or consumption of cementitious products as part of their overall RMX or blended cement production activities, rather than as a separate and stand-alone relevant GB operation. References to a financial year-end (regardless of the month in which the financial year-end falls) have been denoted by 'FY' followed by the relevant year. For example, the financial years ended 31 March 2011 or 31 December 2011 will both be denoted by FY11.

¹ These figures are volume shares of supply. The figures for aggregates and RMX are based on BDS data, and the figure for cement is based on data received from the parties.

² We broadly classified an independent aggregates or RMX operator as being 'medium-tier' if its aggregates or RMX operations met the following minimum annual production criteria: (a) 1 Mt for aggregates; or (b) 100,000m³ for RMX. These thresholds were determined based on the top ten largest aggregates or RMX producers (excluding the five Majors) based on BDS 2009 data. In relation to cement importers, we approached all cement importers operating in GB. The cement importers covered in this section reflect those importers which have engaged with the CC through hearings and/or by providing responses to our information requests. Given the number of cement importers in GB, for practical reasons, we have not presented profiles of all of them. Our assessment of the competitive constraint from any particular firm, or group of firms, does not depend on whether its profile is included in this section.

The Majors

Aggregate Industries

Company overview

- 3.4 Headquartered in Markfield, Leicestershire, Aggregate Industries is a major heavy building materials producer in GB. Its ultimate parent company is Holcim Ltd (Holcim Group), which is incorporated in Switzerland. Aggregate Industries is the main UK holding company for all of Holcim Group's operations in GB.
- 3.5 Aggregate Industries' relevant GB operations comprise its aggregates and RMX operations. Whilst it does not produce cement in GB, Aggregate Industries sources cement and cementitious products for its downstream operations (eg RMX) from domestic producers, and it also imports cement from a Holcim Group cement works in north Germany almost exclusively for its own internal use.³
- 3.6 Aggregate Industries also generates substantial revenues from sales of asphalt and concrete products as well as construction services that fall outside the scope of its relevant GB operations. Table 3.1 shows the total gross revenues generated by each of its operations.

TABLE 3.1 **Aggregate Industries: FY11 gross revenues by product division**

	<i>FY11 gross revenues* £m</i>
Aggregates	[X]
RMX	[X]
Cement/GGBS imports†	[X]
Asphalt‡	[X]
Concrete Products Services§	[X]
Paving and Construction Services	[X]

Source: Aggregate Industries.

*Gross revenues are based on both internal and external sales.

†Aggregate Industries' activities in purchasing third-party cement and cementitious products are taken into account as a procurement activity for its RMX operations and not as a separate relevant GB operation. The majority of Aggregate Industries' purchases of cement and cementitious products are used in the production activities of its downstream operations, eg RMX and concrete products.

‡Asphalt gross revenues include sales made in the Channel Islands, which are not part of GB.

§Whilst the production of both asphalt and concrete products relies on aggregates from both external and internal sources as an input, these activities are treated as being outside the scope of the relevant GB operations.

- 3.7 Further details of Aggregate Industries' ownership, management and operational structure may be found in Appendix 3.1.

Overview of relevant GB operations and strategy

- 3.8 Table 3.2 provides an overview of the total number of active sites for Aggregate Industries' relevant GB operations as at 31 December 2011 and the distribution of sites across the regions of England, and in Scotland and Wales.

³ For the purposes of this section, we have treated Aggregate Industries' cement import activities as an internal procurement activity for its RMX operations and not as a separate relevant GB operation.

TABLE 3.2 **Aggregate Industries' active sites in England, Scotland and Wales**

	Aggregates						RMX		Cement		
	CR	SG	Spec	Marine	Sec	Rec	Fixed	Site	Works	Blend	Terminal
North-East	2	1	1	-	-	-	8	-	-	-	-
North-West	6	1	4	-	1	1	11	-	-	-	1
Yorkshire & the Humber	-	-	-	-	-	-	-	-	-	-	-
East Midlands	6	8	3	-	1	7	7	-	-	-	-
West Midlands	1	1	1	-	-	1	10	-	-	-	-
East of England	-	-	-	-	-	-	-	-	-	-	-
London	-	-	-	-	-	1	12	-	-	-	-
South-East	3	11	1	-	1	8	8	-	-	-	1
South-West	9	9	2	-	4	8	17	-	-	-	1
England (total)	27	31	12	-	7	26	73	-	-	-	3
Scotland	15	5	2	-	-	1	20	-	-	-	1
Wales	2	-	2	-	-	-	-	-	-	-	-
GB (total)	44	36	16	-	7	27	93	-	-	-	4

Source: Aggregate Industries.

Notes:

1. The above table reflects sites as at 31 December 2011. Since December 2011 Aggregate Industries has disposed of a number of sites, including those it has sold to Breedon Aggregates Ltd (Breedon Aggregates) (see paragraph 3.12).
2. For aggregates (sites include quarries and pits, depots are excluded): CR = crushed rock; SG = sand and gravel (land-won); Spec = specialist aggregates; Marine = marine aggregates; Sec = secondary aggregates; Rec = recycled aggregates.
For RMX: Fixed = fixed plants; Site = site plants.
For cement: Works = cement works; Blend = blending station; Terminal = cement import terminal.

- 3.9 Aggregate Industries' primary aggregates operations form the largest part of its aggregates operations. It has quarrying operations across all the regions of England (with the exception of the East of England and Yorkshire and the Humber), and in Scotland and Wales. Aggregate Industries operates a higher number of primary aggregates sites in England, in particular in the South-East, the South-West and the East Midlands, compared with its quarrying operations in Wales and Scotland.
- 3.10 Aggregate Industries told us that its strategy for its aggregates business [REDACTED].
- 3.11 In terms of RMX and cement procurement, Aggregate Industries operates in England and Scotland, but does not operate any plants in the regions of Yorkshire and the Humber and the East of England, and in Wales. Cement for its RMX production activities is sourced through its four cement import terminals: one in Scotland and three in England.
- 3.12 Aggregate Industries told us that before the recent recession, its strategy for RMX had been [REDACTED]. Aggregate Industries sold a number of aggregates, asphalt, RMX and concrete block operations in Scotland to Breedon Aggregates in April 2013.⁴
- 3.13 Further details of Aggregate Industries' relevant GB operations, including JVs and partnership arrangements, is set out in Appendix 3.1.

Cemex

Company overview

- 3.14 Headquartered in Thorpe, Surrey,⁵ Cemex, formerly known as RMC (UK) Ltd, is the principal UK operating subsidiary⁶ engaged in the production of aggregates, cement

⁴ The OFT referred this transaction to the CC on 24 September 2013.

⁵ [Cemex response to the issues statement](#).

⁶ *ibid.*

and RMX. Cemex in turn is wholly owned by Cemex UK, the UK holding company. Cemex's ultimate parent company is Cemex S.A.B de C.V. (Cemex Group), which is incorporated in Mexico.

- 3.15 Table 3.3 shows the total gross revenues generated by each of its operations, both within and outside the scope of the relevant GB operations. Activities outside the scope of the relevant GB operations include the production of asphalt, admixtures (which are used in the production of concrete and RMX) and building products.

TABLE 3.3 **Cemex: FY11 gross revenues by product division**

	<i>FY11 gross revenues* £m</i>
Aggregates	[X]
Cement	[X]
RMX	[X]
Asphalt†	[X]
Admixtures‡	[X]
Ash and Slag§	[X]
Building products¶	[X]
Surfacing#	[X]
Dry silo mortar~	[X]
Angling★	[X]
Rentals◆	[X]

Source: Cemex.

*Based on both internal and external sales.

†Purchases aggregates from Cemex's aggregates operations.

‡Production of admixtures for use as additives in the production of RMX and concrete and sells admixtures to Cemex's RMX operations.

§[X]

¶Includes the production of precast concrete and concrete block paving. Cemex's roof tiles business was divested in November 2011. Cemex's building products operations purchase aggregates and cement from Cemex's upstream operations and external third parties.

#The surfacing of highways, airfields and other infrastructure with asphalt.

~Produces mortar, dry silo mortar, screeds, ready-to-use, lime, sand, plaster and render. Purchases aggregates and cement from Cemex's upstream aggregates and cement operations.

★The use of restored quarries as angling sites, generating revenues via the sale of permits to anglers. Cemex told us that it was currently marketing its Angling business for divestment.

◆Rental income from sundry sites—land and buildings.

- 3.16 Further details of Cemex's ownership, management and operational structure may be found in Appendix 3.1.

Overview of relevant GB operations and strategy

- 3.17 Table 3.4 provides an overview of the total number of active sites for Cemex's relevant GB operations as at 31 December 2011 and the distribution of sites across the regions of England, and in Scotland and Wales. See also Appendix 3.1 for further details.

TABLE 3.4 Cemex's active sites in England, Scotland and Wales

	Aggregates						RMX		Cement		
	CR	SG	Spec	Marine	Sec	Rec	Fixed	Site	Works	Blend	Terminal
North-East	3	1	-	1	-	-	15	-	-	-	-
North-West	3	1	-	-	-	-	21	-	-	-	-
Yorkshire & the Humber	4	1	-	-	-	-	19	-	1	-	-
East Midlands	-	7	-	-	-	-	18	1	-	-	-
West Midlands	-	6	-	-	-	-	18	-	1	-	-
East of England	-	8	-	-	-	-	17	-	-	-	-
London	-	-	-	-	-	-	-	-	-	-	-
South-East	-	10	-	9	-	-	62	3	-	1	1
South-West	2	-	-	1	-	-	12	-	-	-	-
England (total)	12	34	-	11	-	-	182	4	2	-	1
Scotland	3	3	-	-	-	-	15	-	-	-	1
Wales	5	-	-	3	-	-	12	-	-	-	-
GB (total)	20	37	-	14	-	-	209	4	2	-	2

Source: Cemex.

Note: For aggregates (sites include quarries and pits only, depots are excluded): CR = crushed rock; SG = sand and gravel (land-won); Spec = specialist aggregates; Marine = marine aggregates; Sec = secondary aggregates; Rec = recycled aggregates.

For RMX: Fixed = fixed plants; Site = site plants.

For cement: Works = cement works; Blend = blending station; Terminal = cement import terminal.

- 3.18 Cemex operates crushed rock quarries in the regions of the North-East, the North-West and the South-West of England, and in Scotland and Wales. It also operates sand and gravel pits across all the regions of England (with the exception of London and the South-West) and in Scotland. Cemex does not operate any sand and gravel pits in Wales.
- 3.19 Cemex operates fixed RMX plants across all the regions of England (with London being the only exception), and in Scotland and Wales. Around 90 per cent of its fixed RMX plants are based in England.
- 3.20 Cemex also operates two cement works in GB: at Rugby (the West Midlands) and South Ferriby (Yorkshire and the Humber), as well as a stand-alone clinker grinding and blending station at Tilbury (in the South-East).⁷
- 3.21 Cemex told us that its strategy for each of its relevant GB operations was primarily to 'deliver growth organically' and that innovation was at the 'core' of each relevant GB operation's strategy, eg its RMX operations aimed to add four value-added products to its product portfolio each year. It added that each relevant GB operation was tasked with revenue growth and cost reduction to deliver a return on capital employed above its cost of capital and positive 'economic value added', both targets set by Cemex Group.
- 3.22 Cemex told us that in response to the market downturn, it had implemented a strategy of 'rapid and substantial downsizing'.⁸ Since 2007, under this strategy, Cemex had closed two cement works (Barrington and Rochester works) and mothballed one of its two kilns at its South Ferriby works; closed 30 quarries and 100 RMX sites; and reduced its UK workforce by 41 per cent.
- 3.23 Further details of Cemex's relevant GB operations, including JVs and partnership arrangements, is set out in Appendix 3.1.

⁷ *ibid.*

⁸ *ibid.*, Section 2.

Hanson

Company overview

- 3.24 Headquartered in Maidenhead, Berkshire, Hanson's core business lies in the production and sale of aggregates, cement and RMX. Its ultimate parent company is HeidelbergCement AG (Heidelberg), which is incorporated in Germany.
- 3.25 Table 3.5 shows the total gross revenues generated by each of Hanson's operations, both within and outside the scope of the relevant GB operations. Other activities include the production of asphalt, building products and GGBS.

TABLE 3.5 Hanson: FY11 gross revenues by product division

	<i>FY11 gross revenues* £m</i>
Aggregates	[X]
Cement	[X]
RMX	[X]
Asphalt and Contracting†	[X]
Building Products‡	[X]
Other (part of Cement division)§	[X]

Source: Hanson.

*Total gross revenues include both external and internal sales.

†The Asphalt and Contracting division produces asphalt, including for road surfacing. It purchases aggregates from both internal and external sources.

‡Hanson's Building Products division produces bricks, concrete blocks, concrete paving, concrete floors and precast concrete. It purchases aggregates and cement from both internal and external sources.

§Hanson's Cement division supplies GGBS to Hanson's RMX operations and third-party RMX operations. It also supplies white cement to its own and third-party RMX producers. In addition, Hanson has a subsidiary called Calumite Ltd (in which it holds a 51 per cent stake), which produces material from GBS in bulk and bagged form for glass manufacturing plants in the UK.

- 3.26 Further details of Hanson's ownership, management and operational structure may be found in Appendix 3.1.

Overview of relevant GB operations and strategy

- 3.27 Table 3.6 provides an overview of the total number of active sites for Hanson's relevant GB operations as at 31 December 2011 and the distribution of sites across the regions of England, and in Scotland and Wales.

TABLE 3.6 Hanson's active production sites in England, Scotland and Wales

	Aggregates						RMX		Cement		
	CR	SG	Spec	Marine	Sec	Rec	Fixed	Site	Works	Blend	Terminal
North-East	1	-	-	-	-	-	3	1	-	-	-
North-West	2	2	1	-	-	1	25	2	1	-	-
Yorkshire & the Humber	4	5	1	-	-	1	16	-	-	-	1
East Midlands	1	5	-	-	-	-	10	-	1	-	-
West Midlands	1	6	-	-	-	-	13	-	-	-	-
East of England	-	2	-	-	-	2	6	-	-	-	-
London	-	-	-	1	-	1	12	1	-	-	-
South-East	-	6	-	1	-	2	41	2	-	-	-
South-West	6	4	3	-	-	-	26	-	-	-	1
England (total)	15	30	5	2	-	7	152	6	2	-	2
Scotland	-	-	-	-	-	-	9	1	-	-	-
Wales	14	-	3	2	-	-	19	-	1	-	-
GB (total)	29	30	8	4	-	7	180	7	3	-	2

Source: Hanson.

*We requested that marine wharves should be treated as 'active production sites'. Hanson told us that it categorized a site as a wharf where it had 'in place substantial processing infrastructure'; and as a depot where material was landed but was then not subject to significant processing. Hanson told us that this categorization affected its sites at Appledore, Bridgwater and Garston.

Note: For aggregates (sites include quarries and pits, depots are excluded): CR = crushed rock; SG = sand and gravel (land-won); Spec = specialist aggregates; Marine = marine aggregates; Sec = secondary aggregates; Rec = recycled aggregates. For RMX: Fixed = fixed plants; Site = site plants.

For cement: Works = cement works; Blend = blending station; Terminal = cement import terminal.

- 3.28 Hanson's primary aggregates business has quarrying operations across England and Wales, but does not have any quarrying operations in Scotland or in London.
- 3.29 Hanson's RMX operations have fixed plants in all the regions of England, and in Scotland and Wales. It told us that its RMX operations had a particularly strong presence in London, Manchester and Birmingham, but a very limited presence in Scotland, eg during FY11 it had active plants in Glasgow and Edinburgh but not in Aberdeen or Dundee (in relation to Dundee, its RMX site remained inactive throughout FY11).
- 3.30 Hanson also operates two cement works in England (Ketton and Ribblesdale works) and one in Wales (Padeswood works), in addition to two import terminals in England.
- 3.31 Hanson told us that Heidelberg's overall strategy for its UK business was to achieve profit growth through organic improvements by 'implementing cost efficiency measures, maintaining or improving margins through price negotiation with customers and maintaining/gaining market share at sustainable margins'.
- 3.32 Hanson told us that it continually reviewed the 'profile of its network', including focusing on both underperforming assets (for which performance should be improved), and those assets which should be closed, mothballed or sold. It added that it would also consider 'potential asset acquisitions which might enhance its network (in particular, those which might allow for increased internal purchasing of cement and/or aggregates)'.
- 3.33 Further details of Hanson's relevant GB operations, including JVs and partnership arrangements, is set out in Appendix 3.1.

Lafarge

Company overview

- 3.34 As explained in paragraph 3.1(a), the Anglo–Lafarge JV was conditionally cleared by the CC on 1 May 2012 subject to the satisfaction of a number of divestitures. The Anglo–Lafarge JV was allowed to proceed on 7 January 2013 creating Lafarge Tarmac (see paragraphs 3.54 to 3.57) following the implementation of the majority of these divestitures to MI, creating HCM (see paragraphs 3.58 to 3.63). In the following paragraphs, we describe Lafarge’s operations in the UK prior to that date.
- 3.35 Lafarge’s core activities were in the production and sale of cement, aggregates and RMX, as well as the production of asphalt, and the provision of asphalt surfacing and maintenance services and waste management services. Its ultimate parent company is Lafarge Group, which is incorporated in France.
- 3.36 Table 3.7 shows the total gross revenues generated by each of Lafarge’s operations, both within and outside the scope of the relevant GB operations. Activities outside the scope of the relevant GB operations included the production of asphalt and gypsum (this business was sold in October 2011) and waste management services.

TABLE 3.7 Lafarge: FY11 gross revenues by product division

	FY11 gross revenues £m
Aggregates	[REDACTED]
Cement	[REDACTED]
RMX	[REDACTED]
Asphalt and contracting*	[REDACTED]
Plasterboard†	[REDACTED]
Waste management services‡	[REDACTED]
Other§	[REDACTED]

Source: Lafarge.

*Gross revenues exclude any share of JV’s net sales after intercompany sales adjustments.

†In October 2011, Lafarge Group sold its European (including the UK) and South American gypsum business to Etex Group SA. Lafarge Group retained a [REDACTED] per cent stake in the combined entity. During FY11 (up to the end of December 2011), Lafarge’s plasterboard operations purchased [REDACTED] kt of its own aggregates.

‡Lafarge offers waste management services for inert (eg soil and rubble), hazardous (eg contaminated soils and asbestos) and non-hazardous (eg municipal waste) waste materials. These services are provided on a very limited basis, and were primarily used for Lafarge’s quarry restoration activities.

§Other activities include: (a) reselling concrete pump services to its RMX customers (Lafarge does not own any concrete pumps); and (b) generating rental income from Lafarge’s non-operational real estate and property portfolio, as well as proceeds from the sale of any real estate.

- 3.37 Further details of Lafarge’s ownership, management and operational structure may be found in Appendix 3.1.

Overview of relevant GB operations and strategy

- 3.38 Table 3.8 shows the total number of active sites for Lafarge’s relevant GB operations as at 31 December 2011 and the distribution of sites across the regions of England, and in Scotland and Wales. See also Appendix 3.1 for further details.

TABLE 3.8 Lafarge's active production sites in England, Scotland and Wales

	Aggregates						RMX		Cement		
	CR	SG	Spec	Marine	Sec	Rec	Fixed	Site	Works	Blend	Terminal
North-East*	1	1	1	-	-	1	7	-	-	1	-
North-West	-	-	-	-	-	1	3	-	-	-	-
Yorkshire & the Humber	2	4	2	-	-	1	18	-	-	1	-
East Midlands	3	8	3	-	-	4	17	3	1	-	-
West Midlands	-	1	-	-	-	1	7	-	1	-	-
East of England	-	9	-	-	-	7	13	-	-	-	-
London	-	-	-	-	-	-	4	-	-	-	-
South-East	-	3	-	2	-	5	11	1	-	2	1
South-West	-	-	-	-	-	-	-	-	-	-	-
England (total)	6	26	6	2	-	20	80	4	2	4	1
Scotland	-	-	-	-	-	-	4	-	1	-	-
Wales	3	-	3	1	-	-	9	-	1	-	-
GB (total)	9	26	9	3	-	20	93	4	4	4	1

Source: Lafarge.

*Lafarge's Thrislington site produces both crushed rock and sand and gravel, and therefore this site is double counted under 'CR' and 'SG' in this table. Whilst JVs are not shown in the table, Lafarge has one JV (Quarrington) in the North-East.

Note: For aggregates (sites include quarries and pits, depots are excluded): CR = crushed rock; SG = sand and gravel (land-won); Spec = specialist aggregates; Marine = marine aggregates; Sec = secondary aggregates; Rec = recycled aggregates. For RMX: Fixed = fixed plants; Site = site plants.

For cement: Works = cement works; Blend = blending station; Terminal = cement import terminal.

- 3.39 In terms of the number of active production sites, Lafarge's sand and gravel quarrying sites in England and Wales (when compared with its crushed rock sites) accounted for a substantial part of its primary aggregates operations. However, given the relatively smaller scale of its sand and gravel sites, Lafarge told us that it produced a greater volume of crushed rock than sand and gravel. Lafarge did not have any quarrying activities in London, the South-West and Scotland.
- 3.40 Lafarge's RMX operations were based in all the regions of England (with the exception of the South-West), and in Scotland and Wales.
- 3.41 Lafarge operated the only cement works in Scotland (Dunbar), and also operated three other cement works: one in each of the East Midlands (Hope, subsequently divested to MI (see paragraphs 3.58 to 3.63)), the West Midlands (Cauldon), and Wales (Aberthaw). It also operated one cement import terminal in the South-East.
- 3.42 Lafarge told us that in GB, its 'main strategic priorities involve developing innovative building materials, systems and services that meet the expectations of Lafarge's customers in terms of sustainable construction, aesthetics and cost and sustainability'. It added that product and innovation was a key feature of its strategy around the world, and that it dedicated more than €150 million a year to research, product development and industrial performance and process improvement.
- 3.43 Further details of Lafarge's relevant GB operations, including JVs and partnership arrangements, are set out in Appendix 3.1.

Tarmac

Company overview

- 3.44 Prior to the formation of the Lafarge Tarmac JV, Tarmac's ultimate parent company was Anglo American, which is incorporated in England and Wales. Tarmac was

headquartered in Ettingshall, Wolverhampton. It was the holding company for Anglo American's construction materials businesses in the UK and abroad.⁹ Unless stated otherwise, references to Tarmac in this section mean Tarmac's UK construction materials businesses only, of which its relevant GB operations are a part. In the following paragraphs, we describe Tarmac's operations in the UK prior to 7 January 2013, when the Anglo–Lafarge JV was allowed to proceed, creating Lafarge Tarmac (see paragraphs 3.54 to 3.57).

- 3.45 In the UK, Tarmac comprised a group of companies engaged in the production of aggregates, RMX, cement, lime and asphalt, as well as in the provision of road surfacing and maintenance services, waste management services. Tarmac also had a building products business, Tarmac Building Products (TBP), which produces concrete blocks, bagged aggregates and foundry sands¹⁰ and which was not contributed to the Anglo–Lafarge JV (see Section 1).
- 3.46 In FY11, Tarmac's UK and international operations generated total consolidated revenues of £[redacted] and EBITDA of £[redacted], the vast majority [redacted] were generated in GB.
- 3.47 Table 3.9 shows the total gross revenues generated by each of Tarmac's operations, both within and outside the scope of its relevant GB operations. Activities outside the scope of the relevant GB operations include the production of asphalt and building products, ie TBP.

TABLE 3.9 Tarmac: FY11 gross revenues by product division

	<i>FY11 gross revenues £m</i>
Aggregates	[redacted]
Cement	[redacted]
RMX	[redacted]
Asphalt*	[redacted]
National Contracting†	[redacted]
Granulate‡	[redacted]
Lime§	[redacted]
Building products ((ie TBP)¶)	[redacted]

Source: Tarmac.

*In FY11, Tarmac's [redacted] asphalt plants sourced [redacted] Mt of aggregates internally (ie from Tarmac) and [redacted] Mt externally.

†[redacted]

‡Tarmac has three operations which granulates slag to produce granulate or GBS which is then supplied to Hanson for grinding to produce GGBS. Tarmac purchases GGBS from Hanson and blends it with CEM I at its RMX plants.

§Tarmac operates two lime production sites at Tunstead and Hindlow (both in Derbyshire) and produces a range of lime products, eg quicklime, hydrated lime, milk of lime and natural hydraulic lime. The raw aggregates materials used in lime production are [redacted].

¶In FY11, TBP sourced [redacted] Mt of aggregates and [redacted] Mt of cement from Tarmac.

- 3.48 Further details of Tarmac's ownership, management and operational structure may be found in Appendix 3.1.

⁹ Tarmac also has JV operations in the United Arab Emirates, Qatar and Oman, which are involved in the production of aggregates and asphalt, and also provide road surfacing services.

¹⁰ Tarmac told us that TBP separated from Tarmac Ltd in 2010 and had operated independently since that time. It added that trading between Tarmac Ltd and TBP, both pre- and post-separation, has consistently been classified as external within Tarmac's submissions to the CC.

Overview of relevant GB operations and strategy

3.49 Table 3.10 provides an overview of the total number of active sites for Tarmac's relevant GB operations as at 31 December 2011 and the distribution of sites across the regions of England, and in Scotland and Wales.

TABLE 3.10 Tarmac's active production sites in England, Scotland and Wales

	Aggregates						RMX		Cement		
	CR	SG	Spec	Marine	Sec	Rec	Fixed	Site	Works	Blend	Terminal
North-East	5	3	-	2	1	1	11	-	-	-	-
North-West	4	5	-	1	-	7	30	-	-	-	-
Yorkshire & the Humber	3	2	-	-	-	1	18	-	-	-	-
East Midlands	5	6	3	-	3	2	13	-	1	-	-
West Midlands	2	6	3	-	-	3	18	-	-	-	-
East of England	-	6	-	-	-	1	8	-	-	-	-
London	-	-	-	2	-	3	8	2	-	-	-
South-East	-	3	-	4	-	2	6	1	-	-	-
South-West	3	2	-	2	1	7	14	-	-	-	-
England (total)	22	33	6	11	5	27	126	3	1	-	-
Scotland	10	10	-	-	-	5	16	1	-	-	-
Wales	7	1	1	3	6	4	8	-	-	-	-
GB (total)	39	44	7	14	11	36	150	4	1	-	-

Source: Tarmac.

Note: For aggregates (sites include quarries, pits and depots): CR = crushed rock; SG = sand and gravel (land-won); Spec = specialist aggregates; Marine = marine aggregates; Sec = secondary aggregates; Rec = recycled aggregates.

For RMX: Fixed = fixed plants; Site = site plants.

For cement: Works = cement works; Blend = blending station; Terminal = cement import terminal.

3.50 In relation to aggregates, Tarmac's crushed rock operations included quarries across England, except in the regions of the East of England, London and the South-East, and in Scotland and Wales. In relation to sand and gravel pits, Tarmac operated sites across all the regions of England except London, in Scotland and in one site in Wales. Tarmac also had marine sand and gravel dredging sites and wharves in London, and across England and Wales. It told us that the location of its quarries was based on geology and the location of its minerals ownership. It said that its main strategic focus in aggregates had been to reduce its cost base and improve the operating cost efficiencies of production sites through the introduction of 'lean manufacturing principles; energy and logistics improvement programmes; mothballing units and taking out capacity in response in demand'.

3.51 Tarmac operated a single cement works (Tunstead) in the East Midlands, and did not operate any cement or clinker import terminals. It told us that its main strategy in relation to its cement operations had been to maximize the 'capacity throughput' at its Tunstead cement works, and that its business model was 'focused on self-supply' to its downstream RMX operations.

3.52 Tarmac's RMX operations had national coverage and operated in all regions of England, as well as in Scotland and Wales. Tarmac operated site plants in London and the South-East. It told us that its site plants could be operated anywhere and were not limited to the South-East. It said that given the 'local and highly competitive nature of the market', its RMX strategy had been focused on 'offering competitive prices' and customer service. In response to the market downturn, Tarmac told us that it had mothballed a number of its RMX plants and introduced cost reduction and logistics improvement programmes.

3.53 Further details of Tarmac's relevant GB operations, including JVs and partnership arrangements, are set out in Appendix 3.1.

Lafarge Tarmac

Company overview

3.54 As set out in paragraphs 3.1(a) and 3.34 above, Anglo American and Lafarge concluded the Anglo–Lafarge JV on 7 January 2013, creating Lafarge Tarmac. The JV comprises the following business activities: cement, lime, aggregates, RMX, asphalt and asphalt surfacing, maintenance and waste services.

Relevant GB operations and Strategy

3.55 Table 3.11 provides an overview of the total number of active sites for Lafarge Tarmac’s relevant GB operations as at 7 January 2013 and the distribution of sites across the regions of England, and in Scotland and Wales.

TABLE 3.11 Lafarge Tarmac’s active production sites in England, Scotland and Wales (as at 7 January 2013)

	Aggregates*						RMX†‡		Cement		
	CR	SG*	Spec	Marine	Sec	Rec	Fixed	Site	Works	Blend	Terminal
North-East	4	3	1	2	1	2	7	-	-	1	-
North-West	4	5	-	-	-	7	9	-	-	-	-
Yorkshire & the Humber	6	5	3	-	-	2	9	1	-	-	-
East Midlands	5	13	5	-	3	6	11	2	1	-	-
West Midlands	4	8	3	-	-	4	5	-	1	-	-
East of England	-	13	-	-	-	7	10	-	-	-	-
London	-	-	-	2	-	3	8	2	-	-	-
South-East	-	8	-	6	-	7	7	1	-	1	1
South-West	4	1	-	1	1	7	2	-	-	-	-
England (total)	27	56	12	11	5	45	68	6	2	2	1
Scotland	9	7	-	-	-	5	6	1	1	-	-
Wales	12	1	3	4	6	4	4	-	1	-	-
GB (total)	48	64	15	15	11	54	78	7	4	2	1

Source: Lafarge Tarmac.

*SG sites include one JV site (Shepperton) in the South-East. Marine sites include two JV sites in South-East (Marchwood) and North-West (Mersey).

†Fixed sites include five plants which remain subject to the CC’s divestiture undertakings: one each in Wales, East Midlands and Scotland, and two in Yorkshire and the Humber.

‡Five out of the ten RMX plants in the East of England are operated by a JV (C&H Quickmix)

Note: For aggregates (sites include quarries, pits and depots): CR = crushed rock; SG = sand and gravel (land-won); Spec = specialist aggregates; Marine = marine aggregates; Sec = secondary aggregates; Rec = recycled aggregates.

For RMX: Fixed = fixed plants; Site = site plants.

For cement: Works = cement works; Blend = blending station; Terminal = cement import terminal.

3.56 At its inception, Lafarge Tarmac owned:

(a) *Cement*: four cement works, comprising the Dunbar, Aberthaw and Cauldon cement works previously owned by Lafarge (see paragraph 3.41) and the Tunstead cement works previously owned by Tarmac (see paragraph 3.51).

(b) *Aggregates*: 127 primary aggregates quarries, 15 marine aggregates wharves and various other operations including 65 recycling and secondary aggregates sites.

(c) *RMX*: 85 RMX plants.

3.57 According to internal documents prepared by a joint integration steering committee appointed by both Anglo American and Lafarge Group, the primary strategy for the Lafarge Tarmac JV is the [X].

Hope Construction Materials

Company overview

- 3.58 As set out in paragraphs 3.1(a) and 3.34 above, on 7 January 2013 MI concluded its purchase of assets divested by Lafarge and Tarmac, creating HCM. HCM commenced operations with a cement works, a national network of RMX plants, aggregates quarries, rail depots and asphalt plants.
- 3.59 HCM is ultimately owned by MI, which is incorporated in Luxembourg. HCM was divested with a senior management team comprising former employees of Tarmac and Lafarge. On completion of the acquisition, Amit Bhatia (a member of the Mittal family) was appointed as Chairman.
- 3.60 Based on pro forma FY11 figures, HCM's total consolidated net revenues would be £[REDACTED]. In FY13, HCM is forecast to generate total consolidated revenues of £[REDACTED].

Relevant GB operations and strategy

- 3.61 Table 3.12 provides an overview of the total number of active sites for HCM's relevant GB operations as at 7 January 2013 and the distribution of sites across the regions of England, and in Scotland and Wales.

TABLE 3.12 HCM's active production sites in England, Scotland and Wales (as at 7 January 2013)

	Aggregates						RMX		Cement		
	CR	SG	Spec	Marine	Sec	Rec	Fixed	Site	Works	Blend	Terminal
North-East	1	-	-	-	-	-	14	-	-	-	-
North-West	-	-	-	-	-	-	16	-	-	-	-
Yorkshire & the Humber	1	-	-	-	-	-	26	-	-	-	-
East Midlands	-	-	-	-	-	-	19	-	1	-	-
West Midlands	1	-	1	-	-	-	19	-	-	-	-
East of England	-	-	-	-	-	-	8	-	-	-	-
London	-	-	-	-	-	-	-	-	-	-	-
South-East	-	2	-	-	-	-	21	-	-	-	-
South-West	-	-	-	-	-	-	9	-	-	-	-
England (total)	3	2	1	-	-	-	132	-	1	-	-
Scotland	-	-	-	-	-	-	12	-	-	-	-
Wales	-	-	-	1	-	-	14	-	-	-	-
GB (total)	3	2	1	1	-	-	158	-	1	-	-

Source: HCM.

Note: For aggregates (sites include quarries, pits and depots): CR = crushed rock; SG = sand and gravel (land-won); Spec = specialist aggregates; Marine = marine aggregates; Sec = secondary aggregates; Rec = recycled aggregates.
For RMX: Fixed = fixed plants; Site = site plants.
For cement: Works = cement works; Blend = blending station; Terminal = cement import terminal.

- 3.62 At its inception, HCM owned:
- one cement works (the Hope cement works previously owned by Lafarge) with total annual clinker production capacity of [REDACTED] Mt;
 - 172 RMX plants (of which 158 are active) producing just over [REDACTED] million m³ of RMX annually (based on 2010 figures); and
 - six primary aggregates sites and one aggregates depot, with production volumes of around [REDACTED] Mt annually.

3.63 HCM expects its revenues to grow steadily during the first five years following acquisition, driven by a recovery of demand for cement and increased utilization of its aggregates operations. At a high level, HCM's strategy in relation to its new cement, RMX and aggregates operations comprises the following:

(a) *Cement*: [✂].

(b) *RMX*: [✂].

(c) *Aggregates*: [✂].

Medium-tier independents

3.64 In the following paragraphs we set out profiles of ten medium-tier independents engaged in one, or a combination, of the following activities: the production of aggregates or RMX in GB, or the importation of cement into GB.¹¹ More detailed information about these companies may be found in Appendix 3.1. Table 3.13 provides an overview of these ten medium-tier independents.

¹¹ The basis on which these firms have been selected for inclusion in this section is set out in the footnote to paragraph 3.1(b).

TABLE 3.13 Overview of the medium-tier independents included in this section

Operator and 2011 GB market shares*	Ultimate parent company, country of incorporation and market capitalization (December 2012)	Relevant GB operations	Relevant GB operations: FY11 gross revenues (unless stated otherwise)
Breedon Aggregates • Aggs: 3.0% • RMX: 2.0%	• Breedon Aggregates • UK • Market cap: £140m	• 26 aggregates quarries • 40 RMX plants	• Aggregates: £[30]m • RMX: £[30]m
Brett Group • Aggs: 1.0% • RMX: 2.0%	• Brett Group • UK • Not listed	• 32 aggregates quarries & wharves • 20 RMX plants • 1 cement import terminal (used for GGBS)	• Aggregates: £42m • RMX: £30m • Cement: N/A
CPV (Southern Cement‡ and Dragon Alfa) • Cement: N/A	• CPV • Spain • Market cap: €100m	• 2 cement import terminals	• Cement: £[30]m
Dudman Group† • Aggs: 0.5% • RMX: 0.5% • Cement: N/A	• Dudman Holdings Ltd • UK • Not listed	• 10 aggregates quarries • 6 RMX plants • [30] cement import terminals (4 active)	• Aggregates: £[30]m • RMX: £[30]m • Cement: £[30]m
Leiths • Aggs: 0.5% • RMX: 0.5%	• Leiths • UK • Not listed	• 15 aggregates quarries in Scotland • 6 RMX plants in Scotland	FY11 external net revenues only: • Aggregates: £[30]m • RMX: £[30]m
Marshalls • Aggs: 1.0% • RMX: N/A	• Marshalls • UK • Market cap: £200m	• 10 aggregates quarries • 1 RMX plant in Wales	• Aggregates: £[30]m • RMX: £[30]m
Sherburn • Aggs: 0.5% • RMX: 0.5% • Cement: N/A	• Sherburn • UK • Not listed	• 5 aggregates quarries • 5 RMX plants • 1 cement import terminal	• Aggregates: N/A • RMX: N/A • Cement: N/A
Thomas Armstrong • Aggs: 0.5% • Cement: N/A	• Thomas Armstrong • UK • Not listed	• 7 aggregates quarries • 1 cement import terminal	• Aggregates: £14m • Cement: £3m
Titan • Cement: N/A	• Titan Cement Group • Greece • Market cap: €1bn	• 1 cement import terminal	• Cement: £9m
Premier Cement‡ • Cement: N/A	• CRH Group • Ireland • Market cap: €10bn	• 1 cement import terminal	• Cement: £[30]m

Source: Various (see respective company profiles in the main body of this section).

*Market shares equal to, or greater than, 0.3% have been rounded to the nearest 0.5%. Market shares equal to, or less than, 0.2% have been rounded up to 0.5%. Market shares are based on the following sources: (a) for aggregates: table titled 'Summary outputs and shares of aggregates companies – GB (Exc. Marine)' (p169) from BDS report *Estimated market shares of pits, quarries and marine wharves in Great Britain (2011)* (July 2012). Only land-won primary aggregates (ie excluding marine aggregates) are taken into account; and (b) for RMX: table of market shares of RMX companies in Great Britain (p54) of BDS report *Estimated market shares of ready mixed concrete companies in Great Britain (2011)* (July 2012). Market shares of the RMX market include onsite batching, eg volumetric trucks.

†On 15 January 2013, Dudman Group went into administration.

‡On 26 February 2013, CRH Group announced that it had reached agreement, effective immediately, on an asset swap with CPV, where, among the assets being transferred, CRH Group will acquire CPV's Southern Cement. On 2 July 2013, CRH Group announced that it had 'expanded [its] network of cement import facilities in Britain', a reference to its acquisition of five Dudman Group cement import facilities in GB.

Notes:

1. N/A = not available.

2. Market capitalization figures are based on December 2012 figures.

Breedon Aggregates

- 3.65 Breedon Aggregates is listed on the Alternative Investment Market (AIM) on the London Stock Exchange with a current market capitalization of around £140 million.¹² It is the largest independent heavy building materials producer in the UK behind the five Majors, employing over 800 people and operating 26 aggregates quarries, 40 RMX plants and 18 asphalt plants across central England, East Anglia and eastern England, and in the North and North-West of Scotland.¹³ Breedon Aggregates also provides contracting services for civil works and road surfacing.
- 3.66 For FY11, Breedon Aggregates generated total consolidated revenues of £168.9 million and underlying earnings before interest, tax, depreciation and amortization (EBITDA) of £17.1 million,¹⁴ with roughly equal revenue and EBITDA contributions from each of its English and Scottish operations. Breedon Aggregates acquired a number of aggregates, asphalt, RMX and concrete block operations in Scotland from Aggregate Industries in April 2013.¹⁵

Brett Group

- 3.67 Robert Brett & Sons Ltd (Brett Group) is the ultimate parent company for its two primary trading subsidiaries, Brett Aggregates Ltd (based in Faversham, Kent) and Brett Concrete Ltd (based in Aylesford, Kent). Brett Group is an independent producer of aggregates and RMX covering the South-East, including London, and hard landscaping products, eg concrete paving blocks. It also imports GGBS for use in its own downstream operations. For FY11, Brett Group generated total consolidated revenues of £157.8 million and an operating loss (before amortization and exceptional items) of £4.1 million.

CPV (Southern Cement and Dragon Alfa)

- 3.68 Cementos Portland Valderrivas SA (CPV) is headquartered in Madrid and is a listed Spanish multinational heavy building materials producer of cement, aggregates, RMX, concrete products and mortar, with a current market capitalization of around €100 million.¹⁶ In FY11, CPV generated total consolidated revenues of €686.5 million.¹⁷
- 3.69 CPV operates two cement import terminals in the UK, which imported around 380 kt of cement during FY11 through its two UK subsidiaries:¹⁸ Southern Cement Ltd (Southern Cement) and Dragon Alfa Cement Ltd (Dragon Alfa). Southern Cement and Dragon Alfa import only CEM I bulk cement. Once imported, Dragon Alfa transports its cement within the UK via road using its own fleet of bulk tankers.¹⁹ In FY11, Southern Cement and Dragon Alfa together generated total gross revenues of around £[§] million.

¹² www.londonstockexchange.com (4 December 2012).

¹³ Site numbers are accurate as at 31 December 2011.

¹⁴ Underlying EBITDA is stated before redundancy, reorganization and acquisition related costs, as well as before changes in the fair value of financial instruments and gains on bargain purchase. Source: Breedon Aggregates FY11 Annual Accounts.

¹⁵ The OFT referred this transaction to the CC on 24 September 2013.

¹⁶ www.bloomberg.com (4 December 2012).

¹⁷ www.valderrivas.es.

¹⁸ Whilst Southern Cement and Dragon Alfa are not 100 per cent owned by CPV, CPV through direct and indirect shareholdings owns the vast majority of their shares. Source: www.valderrivas.es.

¹⁹ Southern Cement does not own its fleet of vehicles.

- 3.70 On 26 February 2013, CRH plc (CRH Group) announced that it had reached agreement, effective immediately, on an asset swap with CPV, where among the assets being transferred, CRH Group will acquire CPV's Southern Cement.

Dudman Group (prior to going into administration)

- 3.71 On 15 January 2013, Dudman Group Ltd (Dudman Group) went into administration. The sale of some of its assets following its entry into administration to CRH Group is described in paragraph 3.79. The description of its business that follows is based on its operations prior to its going into administration. Dudman Group is headquartered in West Sussex, and is an independent producer of aggregates and RMX, as well as an importer of cement and cementitious materials into GB. Dudman Group employs around [§] staff, of which around [§] are engaged in production activities and around [§] in administrative roles.²⁰ Dudman Group's immediate and ultimate parent company is Dudman Holdings Ltd, a company incorporated in England and Wales.²¹ Dudman Holdings Ltd is wholly owned by one private shareholder.²² For its financial year ended 31 March 2011, Dudman Group generated total revenues of around £[§] million. On 15 January 2013, Dudman Group went into administration.
- 3.72 Dudman Group expanded its operations from recycling and earthworks to agricultural lime in 1993; sand and gravel in 1995 and 1996; cement importation in 2002; and shipping²³ in 2003. Between 2000 and 2006, Dudman Group opened six RMX plants. As at June 2012, within the markets subject to this investigation, Dudman Group operated one crushed rock quarry and nine sand and gravel quarries; six cement import terminals; and six RMX plants.

Leiths

- 3.73 Leiths (Scotland) Ltd and its subsidiaries, Joss (Aberdeen) Ltd, Howie Minerals Ltd and Alexander Ross and Sons Ltd (together Leiths), produce aggregates and RMX, as well as concrete products and asphalt, in addition to providing a number of different services, including surfacing, specialist demolition and civil engineering.²⁴ For its financial year ended 31 December 2011, Leiths generated total consolidated revenues of £63.1 million from its continuing operations, and an operating profit of £3.8 million.²⁵ In total, across all of its subsidiaries, Leiths operates 15 aggregates quarries (13 crushed rock quarries and two sand and gravel pits). Leiths also has four specialist aggregates operations, five recycled aggregates operations and six fixed RMX plants, all of which are co-located at its primary aggregates sites which undertake multiple activities. All of Leiths' activities are carried out in Scotland.
- 3.74 In April 2008, Leiths acquired Howie Minerals Ltd, which was active in the production of crushed rock, limestone products and industrial fillers. In December 2010, Leiths acquired a 60 per cent shareholding in Alexander Ross and Sons Ltd, which operated a single quarry and sand and gravel operations in Inverness.

²⁰ Dudman Group audited accounts for FY11.

²¹ *ibid.*

²² www.dudmangroup.co.uk

²³ [§]

²⁴ Leiths (Scotland) Ltd FY10 audited accounts.

²⁵ Leiths (Scotland) Ltd FY11 audited accounts.

Marshalls

3.75 Based in Huddersfield, Marshalls plc (Marshalls) is listed on the London Stock Exchange and has a current market capitalization of around £200 million.²⁶ Its primary activities are in the production, import and supply of high-quality natural stone and concrete hard landscaping, such as paving, walling and street furniture, for the construction, home improvement and landscape markets. It told us that its activities in aggregates and RMX accounted for a relatively small proportion of its total business: its total consolidated revenues for its financial year ended 31 December 2011 was around £334 million, of which around [X] per cent was accounted for by its aggregates and RMX activities.

Premier Cement

3.76 Premier Cement Ltd (Premier Cement) is a UK cement importer in Northern Ireland and Wales. Premier Cement's ultimate parent company is CRH Group, a listed Irish multinational producer of heavy building materials, which operates in 36 countries. CRH Group is listed on the London, Dublin and New York stock exchanges, with a current market capitalization of around €10 billion.²⁷ For its financial year ended 31 December 2011, CRH Group generated total consolidated revenues of €18.1 billion and EBITDA of €1.7 billion.²⁸

3.77 CRH Group operates in the UK through its UK holding company, CRH (UK) Ltd (CRH), which wholly owns Premier Cement. In addition to importing cement, CRH also produces and sells heavy building materials in GB, including concrete products and bricks. CRH, however, does not produce any RMX in GB. In FY11, CRH generated total UK gross revenues of £[X] million. CRH told us that there were no 'commercial links' between Premier Cement and its other building materials operations in GB, and that all Premier Cement's cement sales were made to third-party customers.

3.78 Premier Cement's cement importation operations in GB commenced in July 2010 when it acquired Dan Morrissey Cement (UK) Ltd, a cement importer established in 1988, which at Swansea docks operated a cement import terminal with a depot for storage and a cement packaging facility. Premier Cement operates one cement import terminal in GB (ie the Swansea terminal), which has total capacity to import up to [X] kt of cement a year.

3.79 As mentioned for CPV above, on 26 February 2013, CRH Group will acquire CPV's Southern Cement as part of its asset swap agreement with CPV. In addition, following the entry of Dudman Group into administration on 15 January 2013, CRH Group acquired the Dudman Group cement import facilities in Garston (Merseyside), Shoreham (West Sussex), Lowestoft (Suffolk), Howden (East Yorkshire) and Montrose (Angus, Scotland).

Sherburn

3.80 Headquartered in County Durham,²⁹ Sherburn Minerals Ltd (Sherburn) is an independent producer of aggregates, RMX, concrete products and asphalt, as well as an importer of cement. It also provides road surfacing and waste disposal services.

²⁶ www.londonstockexchange.com (4 December 2012).

²⁷ www.bloomberg.com (4 December 2012).

²⁸ CRH Group FY11 Annual Report.

²⁹ www.sherburngroup.co.uk.

- 3.81 As at May 2012, Sherburn operated five aggregates quarries, five RMX plants, one cement import terminal and one asphalt plant. Sherburn told us that it did not report the financial performance of each of its product divisions separately. Its total consolidated revenue for its financial year ended 31 March 2011 (which includes revenue from its contracting operations) was around £13.5 million.

Thomas Armstrong

- 3.82 Thomas Armstrong (Holdings) Ltd (Thomas Armstrong) is a producer of aggregates, as well as a producer of aggregate and aerated blocks, precast concrete and timber products. It also provides a range of construction and related services.
- 3.83 Thomas Armstrong produces sand and gravel at two active sites and operates five other sites which purchase aggregates from quarry owners for packaging purposes, as well as a secondary aggregates site. It also operates one cement import terminal in Workington, in the North-West of England. In FY11, Thomas Armstrong generated total consolidated revenues of £116.2 million, of which its aggregates operations and cement import operations accounted for £13.7 million (12 per cent) and £2.6 million (2 per cent) respectively.

Titan

- 3.84 Titan Cement Company SA (Titan Cement Group) is a listed Greek multinational producer of heavy building materials, including aggregates, cement, RMX, concrete products and fly ash, with a current market capitalization of around €1 billion.³⁰ Titan Cement Group has operations in Western Europe, south-eastern Europe, the eastern Mediterranean and North America.³¹ For its financial year ended 31 December 2011, Titan Cement Group generated total consolidated revenues of €1.1 billion and EBITDA of €242.7 million, of which its operations in Greece and Western Europe (namely the UK, France and Italy) accounted for 25 per cent of revenues and 14 per cent of EBITDA. Titan Cement Group's cement operations in Greece and Western Europe comprise four cement plants, four cement import terminals and one fly ash processing plant.³²
- 3.85 Titan Cement Group's UK operations are carried out by Titan Cement UK Ltd (Titan), which is based in Hull (East Yorkshire). Titan operates one cement import terminal in the commercial port of Hull. Titan told us that its UK cement import terminal acted as an 'additional outlet' for Titan Cement Group's cement production, supporting its ultimate parent company's supply of cement.

³⁰ Titan Cement Group has been listed on the Athens Stock Exchange since 1912. Source: www.bloomberg.com (4 December 2012).

³¹ www.titan.gr.

³² *ibid.*

4. Framework for our competitive assessment

- 4.1 In this section, we explain the framework we used for our competitive assessment of the aggregates, cement and RMX markets.
- 4.2 The CC initially published guidelines for the conduct of market investigations in June 2003.¹ The CC decided in early 2010 that the guidelines should be updated to capture the lessons learnt from the market investigations the CC had conducted since the market investigation regime was introduced under the Act. In April 2011, the CC undertook a public consultation on a revised draft of its guidelines for market investigations. In April 2013, the CC published its revised guidelines for market investigations² (the Guidelines).
- 4.3 We begin this section by describing how we have had regard to the Guidelines in our investigation.³ We then set out how we used ‘theories of harm’ (ie hypotheses as to how a possible market characteristic—or characteristics—could give rise to an AEC) in structuring our investigation. Finally, we set out how we have taken recent market developments into account.

The Guidelines

Introduction

- 4.4 In the following paragraphs, we describe how we have drawn on the Guidelines in deciding how to undertake our competitive assessment of the aggregates, cement and RMX markets. Extracts from the Guidelines are presented that are particularly relevant in the context of this market investigation.⁴ We quote from the Guidelines at length on occasion, given their recent publication.
- 4.5 The Guidelines note in paragraph 36 that ‘The CC only carries out analysis that it considers necessary so as to reach a decision on the statutory questions. As the CC scrutinizes evidence, it will prioritize the uses of its resources to undertake as wide and as deep analyses as appropriate.’

The market investigation regime

- 4.6 We noted the Guidelines’ explanation of the purpose of market investigations. Paragraph 18 of the Guidelines states that:

The CC’s market investigation regime sits within the broad spectrum of competition law, operating alongside other regulatory mechanisms, including prohibitions ..., by allowing the competition authorities the opportunity to assess whether competition in a market is working effectively, where it is desirable to focus on the functioning of the

¹ *Market Investigation References: Competition Commission Guidelines, CC3*, June 2003. An archive version is available at http://webarchive.nationalarchives.gov.uk/20111108202701/http://www.competition-commission.org.uk/rep_pub/rules_and_guide/pdf/CC3.pdf.

² *Guidelines for market investigations: Their role, procedures, assessment and remedies CC3 (revised)*, April 2013, available on the CC’s website at: www.competition-commission.org.uk/assets/competitioncommission/docs/2013/publications/cc3_revised_.pdf.

³ We also refer in more detail to certain parts of the Guidelines in subsequent sections of this report as relevant.

⁴ As explained in [paragraph 3](#) of the Guidelines: ‘While the CC will always have regard to these Guidelines in conducting market investigations, it will apply them flexibly and may sometimes depart from them, explaining its reasons for doing so, if it considers that the particular circumstances of the case (including the information available and the time constraints applicable) justify doing so.’

market as a whole rather than on a single aspect of it or the conduct of particular firms within it.

Paragraph 19 continues:

[The regime's] overarching framework allows the investigation to tackle adverse effects on competition (AECs) from any source. As well as being able to look into the conduct of firms, the CC can probe for other causes of possible adverse effects on competition, such as structural aspects of the market (including barriers to entry and expansion) or the conduct of customers.

Paragraph 21 explains that 'The identification of anticompetitive features in a market investigation or the imposition of remedies does not mean that market participants have infringed the law.'

4.7 In paragraph 30, the Guidelines note that:

The Act does not specify a theoretical benchmark against which to measure an AEC. In its market investigation reports the CC uses the term 'a well-functioning market' in the sense, generally, of a market without the features causing the AEC, rather than to denote an idealized, perfectly competitive market.

4.8 Given recent market developments affecting the reference products (see paragraphs 1.12 to 1.19), we also noted that the Guidelines state in paragraph 38 that:

Whatever forms competition takes, the CC considers its effects and expected development over time. Although there may be circumstances in which analysis can be conducted only on the basis of the current state of the market, the CC always considers how a market may evolve.

Features

4.9 Section 131(2) of the Act:

states that the following may be taken to be a 'feature' of a market:

- (a) the structure of the market concerned or any aspect of that structure;
- (b) any conduct (whether or not in the market concerned) of one or more than one person who supplies or acquires goods or services in the market concerned; or
- (c) any conduct relating to the market concerned of customers of any person who supplies or acquires goods or services.⁵

However, the Guidelines also note in paragraph 155 that 'The Act does not require the CC to state whether particular features of a market are to be considered struc-

⁵ The Guidelines, [paragraph 31](#).

tural features or an aspect of conduct. Provided the relevant feature falls within at least one of these categories, the categorization is of little practical importance'.⁶

The AEC assessment

4.10 The Guidelines explain the three key issues considered as part of the AEC assessment. Paragraph 94 states that the CC will look at:

- (a) the main characteristics of the market and the outcomes of the competitive process;
- (b) the composition of the relevant market within which competition may be harmed (market definition); and
- (c) the features, if any, which are harming competition in the relevant market (the competitive assessment—which the CC frames using ‘theories of harm’⁷), considering also possible countervailing factors, such as efficiencies, which may remove or mitigate the competitive harm of the features.

4.11 In the following paragraphs, we look at what the Guidelines say about market characteristics and outcomes, and about the competitive assessment. For ease of reference, we discuss what the Guidelines say about market definition in the market definition section (Section 5) of this report.⁸

Market characteristics

4.12 According to the Guidelines (paragraphs 97 to 102), pertinent market characteristics may include market shares, the nature and characteristics of the products or services, the nature of the customer base, the legal and regulatory framework that applies to the reference market, industry practices, and the history of the market, including recent competitive developments and any significant changes that are anticipated in the market in the foreseeable future.

Market outcomes

4.13 As set out in paragraph 103 of the Guidelines, outcomes of the competitive process that the CC may take into account include prices, profitability, innovation, product range and quality. In relation to price and profitability, the Guidelines describe four possible types of analysis that the CC may undertake: pricing patterns; price cost margins; price comparisons; and profitability.

4.14 We set out our framework for assessing profitability, which is common across the products we analyse, in Appendix 4.1. Our assessment of the cost of capital,⁹ the benchmark against which we assess profitability relating to each product, is set out in Appendix 4.2. Any elements of the profitability assessment framework which are

⁶ Where conduct in a market other than a market for the reference products is taken to be a conduct feature for the purposes of section 131(2)(b) it must clearly be identified as such, although again it is not necessary to identify it as falling within that category to the exclusion of others.

⁷ See paragraph 4.18.

⁸ As regards the effects on competition of the features of the markets as so defined, we note at this point that the Guidelines state in paragraph 153 that ‘The CC may also consider effects in neighbouring markets, including those which are upstream or downstream of the relevant market’.

⁹ The cost of capital is the minimum return that investors in a project expect to receive over the period of that investment. It is an opportunity cost and can be seen as the yield on capital employed in the next best alternative use.

specific to an individual product are handled in the relevant product-specific appendix.¹⁰ As we assess the state of competition on an individual market-by-market basis, rather than on a global pan-market basis, we also assess the profitability of the Majors' cement, aggregates and RMX operations separately¹¹, ie on a stand-alone basis for each product. It is therefore important that any sales or purchases between the activities of vertically-integrated companies reflect market prices so that profitability of each individual market is correctly identified.¹²

The competitive assessment

4.15 According to paragraph 157 of the Guidelines, 'Structural features may include high levels of market concentration, high entry barriers, ... and buyer power'. Paragraph 158 of the Guidelines notes that government policy and regulation can also be structural features.

4.16 According to paragraph 160 of the Guidelines:

The conduct of firms which supply the market when acting in other markets can be a feature of the market. For example, if the market investigation concerned competition to supply a particular manufactured good, the conduct of vertically integrated suppliers in the market for the input might be a conduct feature.

4.17 Paragraph 162 of the Guidelines notes that 'In some circumstances, several features may in combination harm competition'.

Theories of harm

4.18 Paragraph 163 of the Guidelines explains that 'To provide focus and structure to its assessment of the way competition is working in a market the CC sets out one or more "theories of harm". A theory of harm is a hypothesis of how harmful competitive effects might arise in a market and adversely affect customers.' Paragraph 165 of the Guidelines continues by stating that 'The starting point for formulating theories of harm in market investigations is the work already done by the referring body, particularly the terms of reference ... and decision documents.'

4.19 Paragraph 170 of the Guidelines says that:

competitive harm can flow from five main sources:¹³

¹⁰ All the Majors prepare financial information under the historical cost accounting (HCA) rules in accordance with UK or international accounting standards. Some Majors have revalued some of their fixed assets, in which case the basis of preparation is described as modified HCA. We, however, are more interested in economic profitability where profits are determined based on the continuing costs of supply. In such an analysis, the value of resources consumed and assets utilized should reflect their current value to the business, not their historical cost. This latter accounting basis of preparation is described as current cost accounting (CCA). We seek to present our assessment of the levels of profitability both on an HCA and a CCA basis. In determining the level of profitability, we recognize impairment losses as well as the more typical asset depreciation charges. These impairment losses relate to the unexpected diminution in the current value of assets used in the supply of the reference products due to the emergence of excess capacity following the unexpected slump in demand in 2007. These impairment losses do not represent any cash flows incurred in the period, rather recognition during the period that assets are now not worth as much to the business as previously thought.

¹¹ We also assess the profitability of Tarmac's (now Lafarge Tarmac's) GBS operations and Hanson's GGBS operations separately.

¹² So long as internal transfer prices between a vertically integrated firm's upstream and downstream operations are consistent with market (external) prices, a persistently loss-making situation would suggest that it would be rational for the firm to exit that market. This is even the case when some of the firms' costs vary only in the very long run as it is necessary to recover all costs in order to operate on a sustainable basis.

¹³ Paragraph 172 of the Guidelines notes that these sources are not mutually exclusive.

- (a) unilateral market power;
- (b) barriers to entry and expansion;
- (c) coordinated conduct;
- (d) vertical relationships; and
- (e) weak customer response.

4.20 Building on the observations about the supply of aggregates, cement and RMX made by the OFT in its reference decision (see paragraphs 1.8 and 1.9), we identified four theories of harm in our issues statement (see paragraph 1.21) in relation to each of the reference markets:

- (a) Theory of harm 1: high levels of concentration and barriers to entry mean that the suppliers can exercise unilateral market power¹⁴.
- (b) Theory of harm 2: coordination between producers prevents, restricts or distorts competition.
- (c) Theory of harm 3: vertical integration and exclusionary behaviour.¹⁵
- (d) Theory of harm 4: aspects of policy and regulation have the effect of preventing, restricting or distorting competition.

4.21 We used these theories of harm to structure our investigation, and we reported on the progress of our investigation under each of these headings when we published our updated issues statement (see paragraph 1.23). We note that much of the same evidence is relevant to consideration of the possible existence of both unilateral market power and coordination and that, taken in isolation, some evidence may be consistent with both coordinated and non-coordinated behaviour (see paragraph 4.28). In this report we therefore present our assessment of the scope for unilateral market power and coordination together for each product. Our assessment of vertical effects and the competitive impact of policy and regulation are presented in further separate sections.

4.22 In the following paragraphs, we develop our theories and set out certain relevant extracts from the Guidelines that relate to how the CC will undertake its assessments of unilateral market power, coordination and vertical relationships.

Unilateral market power

4.23 In more detail, our theory is that individual suppliers have market power within relevant markets as a result of market concentration and barriers to entry. Such suppliers would have the ability to set higher prices than would otherwise be the case, or reduce the quality of other aspects of their offer, as a result of limited competition

¹⁴ Under this heading in our issues statement, we also said in paragraph 32 that we would consider 'whether the markets for inputs to the production of cement (including fly ash and ground granulated blast furnace slag (GGBS)) affect competition in the markets for cement'.

¹⁵ Aggregates and cement are key inputs into the supply of RMX. Some of the companies involved in these sectors are vertically integrated. Notably the four cement producers present in GB also have significant RMX operations and (with one exception) significant aggregates operations. Other companies also have both aggregates and RMX operations, and may be involved in the importation of cement. These aggregates producers may also be integrated into the production of other downstream products such as asphalt.

from other suppliers, and limited threat of entry or expansion into the market by other suppliers.

4.24 We examine these issues in Sections 6, 7, 8 and 9.

4.25 The following parts of the Guidelines are pertinent (among others) to this theory of harm, in the context of our investigation:

(a) Paragraph 178 of the Guidelines explains that ‘... competition within a market may be weak when one or more market participants enjoys significant market power, and is therefore able to influence market outcomes and other important aspects of competition’.

(b) Paragraph 180 of the Guidelines lists direct indicators of market power, including high profits ... , high price-cost margins , low single firm demand elasticities ... or other evidence of adverse effects in the form of high prices, low quality and limited choice Paragraph 181 of the Guidelines also notes that the way a firm behaves may give an indication of the market power that it may enjoy.

(c) Paragraph 185 of the Guidelines lists the most common reasons for one or more firms to possess unilateral market power: high concentration, capacity constraints; lack of substitutability; and the absence of supply-side constraints.¹⁶

(d) Paragraph 189 of the Guidelines explains that:

... market concentration and the exercise of unilateral market power are not necessarily linked to the position of a single firm. A market with a small number of suppliers which are protected by barriers to entry (an oligopoly), for example, may be characterized by significant market power. One mechanism by which this market power can manifest itself is through coordinated conduct However, unilateral market power can be enjoyed by a number of firms even where they act independently, albeit aware of each other’s presence —so-called ‘non-coordinated oligopolies’.

Coordination

4.26 In more detail, our theory is that there is coordination between suppliers that distorts or restricts competition, either in any of the individual product markets, or spanning more than one product market. Coordination arises when, as a result of repeated interaction with rivals, suppliers in the market opt for a strategy of avoiding or limiting competition between them because they are aware and take into account that competition with rivals (for example, to undercut their prices in order to win more business) will lead to competitive responses by rivals, with the result that their profits will ultimately be lower than if they avoided or limited competition. The result of coordinated behaviour (which can take different forms for different firms in the market) is that prices are higher (or the quality aspects of firms’ offers are lower) than would otherwise be the case.

4.27 We examine these issues in Sections 6, 7, 8 and 9.

¹⁶ In relation to the absence of supply-side constraints, paragraphs 200 to 204 of the Guidelines explain that this means there is no prospect of expansion into the market by firms already possessing the assets necessary to produce the goods or services concerned.

4.28 The following parts of the Guidelines are pertinent (among others) to this theory of harm, in the context of our investigation:

(a) Paragraph 238 of the Guidelines notes that ‘Coordination typically involves repeated interaction, aimed at increasing or protecting profits, between firms in the market. But coordination can take different forms across a wide spectrum of behaviour’. Paragraph 239 continues:

At one end of the spectrum, direct and unambiguous communication among competitors can lead to explicit agreements to fix prices, share markets or allocate customers. At the other end of the spectrum, when a market is sufficiently stable and rival firms interact repeatedly they may be able to anticipate each other’s future actions, enabling them tacitly to establish a coordinated course of action without communicating directly or sharing information. Coordination does not have to be ‘perfect’ at all times to affect a market. For example, it may be intermittent; ie periods of coordination may be interspersed with periods of greater competition when not all competitors see it in their interest to cooperate.

Paragraph 240 concludes that ‘Any form of coordination has the potential to reduce strategic uncertainty among competitors to the detriment of their customers and, depending on the degree, may thereby result in an AEC’.¹⁷

(b) In relation to how the CC will assess whether coordination is giving rise to an AEC, paragraph 244 of the Guidelines states that:

the CC will examine the evidence of the behaviour of firms in the market, structural characteristics of the market and market outcomes. In doing so, the CC considers whether market conditions are conducive to coordination, seeks to understand the way in which the firms in the market operate and comes to a view on whether the observed outcomes are best explained by coordinated or non-coordinated behaviour.

Paragraph 249 notes that ‘The CC will generally look at a range of market outcomes in combination. A single outcome looked at in isolation may often be consistent with both coordinated and non-coordinated behaviour.’

4.29 Further details of what the Guidelines say about how the CC will assess whether coordination is giving rise to an AEC are set out in Sections 7 and 8 of this report.

Vertical integration and exclusionary behaviour

4.30 There are several different ways in which vertical integration could affect competition in these markets. One hypothesis is that vertical integration itself affects suppliers’ costs so that non-integrated suppliers are unlikely to be able to compete effectively with integrated suppliers. Another hypothesis is that one integrated supplier (acting unilaterally) is raising the price of cement (and/or aggregates) relative to the prices of RMX, with the effect of squeezing the margins of non-integrated RMX suppliers, such that non-integrated suppliers are weakened or excluded from the market. A variant

¹⁷ Paragraph 240 also notes that ‘The sole focus of any market investigation is upon the effects on competition of possible features of the market (whether through coordinated conduct or otherwise) and it is not the CC’s role to ascertain whether one or more parties have been acting unlawfully. While enforcement action on some cases of coordinated behaviour may fall within Article 101 of the TFEU or Chapter 1 of CA98, the CC may investigate all forms of coordination.’

on this hypothesis is that several integrated suppliers (acting collectively) are squeezing the margins of non-integrated RMX suppliers.

4.31 We examine these issues in Section 10.

4.32 The following parts of the Guidelines are pertinent (among others) to this theory of harm, in the context of our investigation:

(a) Paragraph 267 of the Guidelines notes that:

... despite their potential to enhance efficiency and consumer welfare, vertical relationships can also sometimes lead to an AEC in a market, particularly by allowing the firms to:

(a) foreclose¹⁸ rivals' access to inputs and customers; and/or

(b) otherwise have a dampening effect on competition.

(b) In relation to foreclosure, paragraph 274 of the Guidelines states that:

For vertical relationships to result in foreclosure of rivals, the firms involved must have significant market power in one or more markets along the supply chain. They will also need to have both the ability and an incentive to seek to foreclose rivals (this will not necessarily be the case, even if the firms enjoy significant market power).

(c) In relation to the potential for vertical relationships to otherwise dampen competition, the Guidelines state in paragraph 271 that:

Since the rationale for vertical relationships is often unconnected to competition issues ..., a widespread network of overlapping vertical relationships may develop within an industry. While such arrangements may address market failures, they can have far-reaching effects on the operational structure of the upstream and downstream markets, reducing the incentives on firms to compete vigorously against each other and possibly leading to an increased likelihood of coordinated conduct by firms at the same level of the supply chain and to a greater incidence of entry barriers.'

Paragraph 294 notes that:

These potential effects, for example the possibilities of coordination or entry barriers arising from competition-dampening relationships are assessed in the ways described in the relevant sections [of the Guidelines] on coordinated conduct and entry barriers.

Aspects of policy and regulation have the effect of preventing, restricting or distorting competition

4.33 Under this theory, we assess whether any aspect of regulation of these industries, or the implementation of policies relevant to these industries, has the effect of preventing, restricting or distorting competition. While we recognize the possible benefits of

¹⁸ According to [paragraph 269](#) of the Guidelines 'Foreclosure can be total (where rivals are forced to exit from the market or are prevented from entering) or partial (where rivals or potential entrants—are materially disadvantaged and consequently compete less effectively).'

such measures, we also consider whether they might have any adverse effects on competition that should be acknowledged, such as distorting behaviours or creating a barrier to entry.

4.34 We assess this in Section 11.

Effect of recent developments

4.35 We note finally that the analysis conducted in this investigation that uses information and data from before January 2013 relates to the operation of markets for aggregates, cement and RMX prior to the formation of Lafarge Tarmac and HCM. Due to the timing of this investigation and of the statutory deadlines under which the CC operates, a significant amount of the evidence used in the analysis presented in this report relates to 2012 and earlier years.

4.36 The extent to which the formation of Lafarge Tarmac and HCM affect our analysis and findings depends on the degree to which these events might be expected to have a material effect on the particular issue under investigation. Some aspects of our analysis and findings are unlikely to be affected by the formation of Lafarge Tarmac and HCM.¹⁹

4.37 In relation to other aspects of our investigation, the formation of Lafarge Tarmac and HCM might be expected to change the structure of the relevant markets, with potential implications for suppliers' competitive strategies and future market outcomes. In relation to these aspects of our investigation, we formed a view of the weight to be attached to the most recent evidence about the current operation of the market as well as to evidence about how markets operated in the past, taking into account these and other market developments.

¹⁹ For example, we would not expect these events to have any material effect on the regulatory framework or the extent of barriers to entry and/or expansion.

5. Market definition

Introduction

5.1 In this section, we set out the approach we have taken in this investigation to market definition in relation to the supply of aggregates, cement, GGBS¹ and RMX. The focus of our analysis of market definition has been to examine the extent of substitution between different products and how this may vary by customer, location or application. This assessment of substitution, and the markets defined as a result, provides a framework for our competitive assessment. We have had regard to the Guidelines in defining those markets for our investigation:

(a) Paragraph 132 of the Guidelines explains how the CC conducts market definition in its market investigations, namely that:

... the CC identifies the participating firms and customers and the traded products in the market(s) that are the subject of the reference. This enables the CC to focus on the sources of any market power and provides a framework for its assessment of the effects on competition of features of a market.

(b) Paragraph 133 of the Guidelines states in addition that:

Market definition is thus a useful tool, but not an end in itself, and identifying the relevant market involves an element of judgement. The boundaries of the market do not determine the outcome of the CC's competitive assessment of a market in any mechanistic way. The competitive assessment will take into account any relevant constraints from outside the market, segmentation within it, or other ways in which some constraints are more important than others.

(c) Paragraph 130 of the Guidelines explains the role of demand-side and supply-side constraints in market definition: 'The willingness of customers to switch to other products is a driving force of competition. In forming its views on market definition, the CC will therefore consider the degree of demand substitutability. In some markets, supply-side constraints will also be important.'

(d) In paragraph 142, the Guidelines note that there are both product and geographic dimensions to market definition, and that markets can also be defined with reference to customer group or temporal factors.

5.2 We note that, in the Anglo–Lafarge JV inquiry (see paragraph 1.16), the CC also considered the appropriate scope of markets for aggregates, cement and RMX. We have drawn on the CC's assessment of market definition in that case, and on the evidence that it took into account in reaching its conclusions. However, we have conducted a fresh assessment of this issue and have collected additional evidence to inform our view of the appropriate market definition for the particular purposes of our investigation, including for our consideration of market definition for GGBS. This has led us to

¹ Paragraph 32 of our issues statement explained that we would consider 'whether the markets for inputs to the production of cement (including PFA and GGBS) affect competition in the markets for cement'. Hanson is the sole producer of GGBS in GB, and Lafarge Tarmac is the sole producer of GBS—the key raw material input into the production of GGBS—in GB. Both Lafarge Tarmac and Hanson are also significant producers in the GB cement markets. We therefore considered that the sole production by these parties of GBS and GGBS in GB respectively warranted consideration, and we analysed the appropriate market definition for GGBS for the purposes of this market investigation. We did not consider the appropriate market definition for PFA for the reasons set out in paragraph 5.43 nor for GBS for the reasons set out in paragraph 7.255.

take a different approach from the Anglo–Lafarge merger inquiry on some aspects of market definition and we set out, with our reasons, where this is the case.

- 5.3 In the remainder of this section we consider the product and geographic scope of relevant markets for aggregates, cement, GGBS and RMX, and set out our conclusions on market definition. In this section we use the terms ‘relevant market’, ‘relevant product market’ and ‘relevant geographic market’ in the sense that they are ordinarily used in competition law and economics. In section 134(3) of the Act, the term ‘relevant market’ is defined more narrowly as a market ‘for goods or services of a description specified in the reference’ (so that a market for GGBS would not be described as a ‘relevant market’). That distinction is relevant to our competitive assessment in Section 8, and further explained there (see paragraphs 8.438 to 8.441). It does not, however, have any bearing on our analysis in this section, which is concerned purely with the economic definitions of the markets in question.

Aggregates

- 5.4 We set out below our consideration of market definition in relation to aggregates, first in relation to product market definition and then in relation to the geographic scope of aggregates markets.

Product market definition

- 5.5 During our investigation, we invited views from interested parties on the substitutability of different types of aggregates and the approach that we should take to product market definition for aggregates. Most of the submissions we received on this topic came from the Majors—and views expressed by other parties were embraced by the comments made by the Majors. Further details of the Majors’ submissions on this issue are in Appendix 5.1. In summary:

- (a) Most of the Majors (Lafarge, Aggregate Industries, Cemex and Tarmac) told us that the relevant market for construction aggregates should include all aggregates (whether crushed rock or sand and gravel, and whether primary or recycled and secondary). Hanson did not submit a view on the precise product market definition for aggregates, but commented that primary aggregate suppliers were subject to significant constraints from recycled and secondary aggregates suppliers. The rationale for the view that we should not look at sand and gravel and crushed rock separately was essentially that different rates of usage in local areas could be explained by geological constraints (eg lack of local availability in certain local areas) and were not evidence of limited substitutability. Proponents of this view argued that both sand and gravel and crushed rock could be, and were, used interchangeably, eg for RMX and concrete products.
- (b) Two Majors (Tarmac and Cemex) commented specifically on specialist aggregates for non-construction uses (for example, rail ballast, high PSV and high-purity limestone for flue gas desulphurization). They said that there were separate product markets for each of these specialist aggregates, because customers for these products could not substitute between them (this is known as lack of demand-side substitutability).

- 5.6 A number of the arguments put forward by the Majors were uncontroversial and we have incorporated these into our approach to product market definition. In particular:
- (a) We agreed with Lafarge, Aggregate Industries, Cemex and Tarmac that different grades (ie particle sizes) of aggregates are effective substitutes because of the

ease with which suppliers could switch between production of different grades, including between fine and coarse aggregates, or at any rate invariably produce a range of grades alongside one another from a given quarry or aggregates reserve.² We found that different grades of primary aggregates can be produced from both crushed rock and sand and gravel and each quarry tends to produce multiple grades. The different grades are produced by screening and, if necessary, crushing and washing the aggregates that have been quarried. Given the high degree of supply-side substitutability, we therefore concluded that different grades of aggregates should be included within the same product market.

(b) We also agreed with Tarmac and Cemex that specialist aggregates (eg rail ballast, high-purity limestone) are in different product markets from each other and from construction aggregates, as these are used for different applications, there is no demand-side substitution and there is no supply-side substitution.

5.7 We consider in more detail below two aspects of product market definition which raised more complex issues:

(a) the extent to which crushed rock and sand and gravel aggregates are demand-side substitutes (paragraphs 5.8 to 5.11); and

(b) the extent to which recycled and secondary aggregates are demand-side substitutes for primary aggregates (paragraphs 5.12 to 5.22).

Substitution between crushed rock and sand and gravel

5.8 As explained in Section 2, there is a 'rock line' in Great Britain, to the north and west of which most aggregates produced are crushed rock aggregates, and to the south and east of which most aggregates produced are sand and gravel. Given this geographic distribution of different types of rock with Great Britain, the availability of product locally is an important determinant of whether to use crushed rock or sand and gravel, where both can be used for a particular application.

5.9 All the Majors submitted evidence and arguments to indicate that both crushed rock and sand and gravel can be used for a wide range of applications and that their substitutability for each other is illustrated by the levels of regional variation in the use of aggregates in downstream applications.³ In particular, all the Majors provided data showing, for their internal businesses (RMX, concrete product production⁴ and asphalt), the proportion of aggregates used by type and by region.⁵

5.10 The evidence suggests some variation in substitutability between crushed rock and sand and gravel depending on the application:

(a) For RMX and concrete products, there is a large variation in the use of sand and gravel and crushed rock depending on the region: for instance, in Wales and the North-West, RMX is produced predominantly using crushed rock as the coarse

² In other words, there is a high degree of supply-side substitutability between different grades of aggregates.

³ For example, Lafarge told us that the extent of regional variation in the use of aggregates in downstream applications indicated the extent of substitutability between different types of construction aggregates in the same product market.

⁴ Lafarge does not operate a concrete product production business.

⁵ We reproduce the data provided by Aggregate Industries and Lafarge in Appendix 5.1. The data from all Majors shows very similar patterns.

element of the mix, whereas in the South-East, East Anglia and the East Midlands, it is produced almost solely with sand and gravel.⁶

- (b) For asphalt production, there is relatively little use of sand and gravel (although this tends to vary somewhat by region⁷), whereas crushed rock (including high PSV) appears to be the main aggregate used. The British Aggregates Association (BAA) told us that gravel was not appropriate for the production of asphalt, because the aggregates used for asphalt needed to be angular. However, several other parties told us that producers were able to make gravel angular by crushing it so that it was suitable for use in asphalt. The MPA also provided data on the use of aggregates in GB asphalt manufacture. According to the data from the MPA, sand and gravel accounted for about 11 to 12 per cent of primary aggregates used in asphalt production in 2009 and 2010.⁸
- (c) The Majors do not use aggregates directly themselves for general construction purposes. However, [X] and Tarmac both provided estimates of the types of aggregates used in general construction (see Appendix 5.1), and this data suggests that there is relatively little use of sand and gravel for general construction (5 to 10 per cent of aggregates used⁹); the main aggregates used being crushed rock and recycled/secondary aggregates mostly as sub-base and structural fill. [X] also provided estimates of the use of aggregates for general construction by region, which suggested that even in regions where sand and gravel was prevalent, crushed rock and recycled aggregates were the main aggregates used. Cemex told us that there was considerable substitution between crushed rock and sand and gravel for use in general construction, and that the decision of which type of aggregate to use in a particular area would be driven by cost and availability.

5.11 Overall, we concluded that the choice between crushed rock or sand and gravel is largely influenced by geology and availability for RMX and concrete production. For asphalt production, it appears that sand and gravel aggregates are generally less suitable than crushed rock.¹⁰ For general construction uses, the evidence suggests that sand and gravel aggregates are used in relatively small proportions overall, but that they are potentially interchangeable in such applications.

Substitution between primary and recycled/secondary aggregates

5.12 Figure 5.1 shows the trend in the overall share of aggregates sales accounted for by recycled and secondary aggregates. This shows a steady increase from around 10 per cent of total sales in 1989 to just below 30 per cent in 2011.

⁶ Aggregate Industries explained that RMX could be made out of sand and gravel, or sand and crushed rock. The sand could either occur naturally, or it could be manufactured by washing crushed rock fines. Aggregate Industries told us that, in areas where sand and gravel was prevalent, sand and gravel would be the exclusive or almost exclusive aggregate used in RMX production, whereas in areas where sand and gravel was scarce or inaccessible, RMX was produced using crushed rock products.

⁷ For example, Tarmac noted that in certain regions of GB (eg the South-West and East Anglia), BDS data showed that a non-trivial proportion of aggregates used in asphalt production was sourced from sand and gravel.

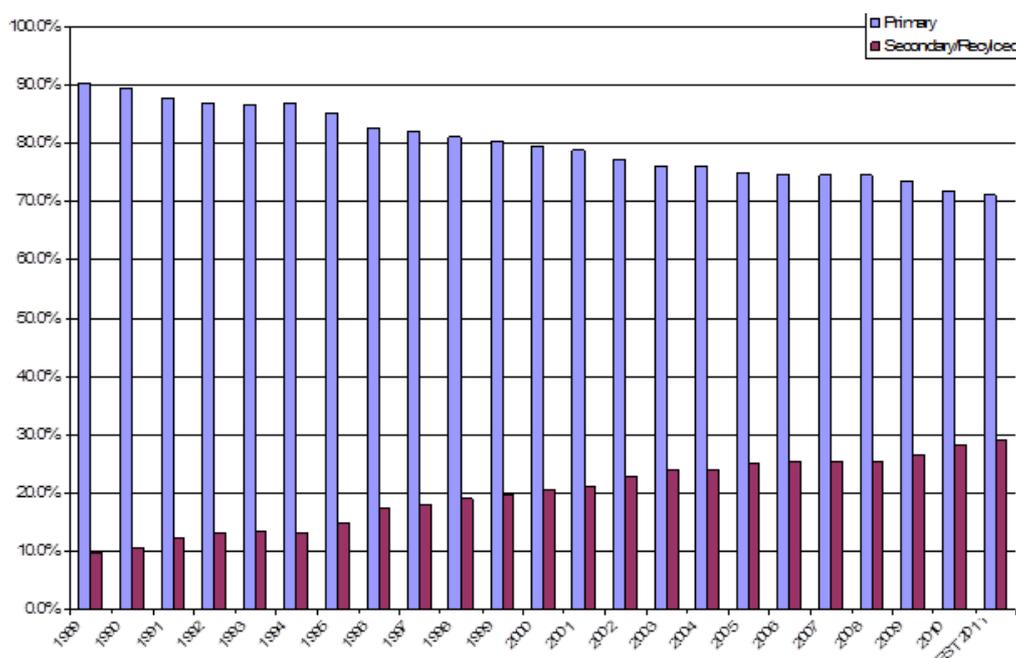
⁸ Source; data from ONS, Business Monitor PA 1007 Mineral extraction in Great Britain.

⁹ Aggregate Industries told us that, while the use of sand and gravel for general construction was difficult to estimate accurately, it did not believe that a 5–10 per cent estimate could be accurate.

¹⁰ Aggregate Industries told us that it was not accurate to suggest that sand and gravel were not good substitutes for crushed rock in asphalt applications, and that sand and gravel made up more than 7 per cent of the aggregates used by Aggregate Industries' own asphalt businesses. This is similar to the estimates provided by Tarmac in Appendix 5.1. We consider that these low proportions of use of sand and gravel in asphalt (compared with crushed rock which accounts for over 70 per cent of the aggregates used in asphalt) suggest that sand and gravel aggregates are not generally as suitable for asphalt production as crushed rock aggregates.

FIGURE 5.1

Share of primary and recycled/secondary aggregates, 1989 to 2011



Source: MPA statistics.

- 5.13 The extent of substitution between primary and recycled/secondary aggregates varies significantly depending on the application. The scope for substitution will also vary according to the availability of recycled aggregates, given that the main source of recycled aggregates is demolition activity.¹¹
- 5.14 We reviewed several sources of evidence on the substitutability between primary and secondary aggregates for different applications, including evidence gathered by the CC during the Anglo–Lafarge JV inquiry.
- 5.15 First, we reviewed estimates provided by [redacted] and Tarmac (based on BDS data) on the extent to which different aggregates are currently used for different applications in GB. These estimates, which are presented in Appendix 5.1, indicate that:
 - (a) For the manufacture of RMX (which accounts for about 20 per cent of aggregates used in GB), the main aggregates used are sand and gravel (60 to 65 per cent) and crushed rock (25 to 30 per cent). Use of recycled and secondary aggregates is low (5 to 15 per cent).
 - (b) For the manufacture of concrete products (which accounts for about 10 per cent of aggregates used in GB), the main aggregates used are sand and gravel (50 to 55 per cent) and crushed rock (30 to 40 per cent). Usage of recycled and secondary aggregates is low (5 to 15 per cent).
 - (c) For the manufacture of asphalt (which accounts for about 12 per cent of aggregates used in GB), the main aggregates used are crushed rock (70 to 75 per

¹¹ In this context, Hanson told us that where construction took place on a brownfield site (ie a site where there had previously been building development), there was a readily available source of recycled material for the project, whereas when construction was at a greenfield site (where there had been no previous development), recycled aggregates would not be available directly at the site.

cent). Sand and gravel accounts for 5 to 15 per cent of use, and secondary and recycled aggregates account together for 10 to 20 per cent of use.

(d) For general construction (which accounts for about 50 per cent of aggregates used in GB), the main aggregates used are crushed rock (45 to 50 per cent) and recycled and secondary aggregates (40 to 50 per cent).

- 5.16 The estimates provided by Tarmac also show that, between 2008 and 2010, the proportions of recycled and secondary aggregates used in each application have remained relatively constant (a small reduction in use for concrete, and a small increase for asphalt and general construction).
- 5.17 Commenting on these figures, Hanson told us that one factor that governed the ability to use secondary and recycled aggregates in RMX was limited storage facilities for additional mix ingredients at most RMX plants. Hanson told us that, if a secure source of available recycled or secondary materials were available on a medium- to long-term basis, the cost of investment in additional storage should not be difficult to justify. Cemex told us that recycled and secondary aggregates were suitable for production of RMX and provided an example of an independent RMX producer which used a combination of recycled and primary aggregates in its RMX production, as well as noting that Tarmac used secondary aggregates for RMX production. Cemex also told us that recycled aggregates might not always be suitable where high specification concrete was required, but that such circumstances were limited.
- 5.18 Secondly, we reviewed data from each Major on its own use of aggregates for its downstream activities (RMX, asphalt and, where applicable, concrete block production). These estimates are presented in Appendix 5.1. In general, the Majors used very little, if any, recycled and secondary aggregates for RMX, asphalt and concrete block production.¹² Commenting on this finding, a number of Majors noted that their own use of recycled and secondary aggregates was unlikely to be representative of the true opportunities for substitution because, as producers of primary aggregates, they had a strong incentive to use their own products in their downstream activities.¹³ Some majors also noted recent developments which had led them to increase their usage of recycled and secondary aggregates in asphalt production in particular.¹⁴
- 5.19 Thirdly, we reviewed the results of a survey commissioned by the CC in the context of the Anglo–Lafarge JV inquiry from GfK (a market research company).¹⁵ Details of this survey and of parties' comments about its findings are in Appendix 5.1, paragraphs 16 to 25. Overall, the survey results indicate that:
- (a) For RMX production, there has been relatively limited switching to recycled and secondary aggregates and usage of these is low by RMX producers. However,

¹² Aggregate Industries told us that it was unable to specify what percentage of secondary and recycled aggregates it used for the production of asphalt, RMX and concrete products. It said that it was often the case that the recycled or secondary material would be provided by the customer as part of the supply agreement and therefore it was not recorded as a purchase.

¹³ Lafarge noted that its own internal use of recycled and secondary aggregates was lower than, and was not representative of, the true levels of substitutability with primary aggregates that were in fact possible, because Lafarge was predominantly already heavily invested as a primary aggregates producer with spare capacity and therefore sought to use primary aggregates in its own downstream operations where possible. Similarly, Hanson told us that it was a primary aggregates producer and therefore was disincentivized to use secondary or recycled aggregates in its downstream activities. We noted that the same argument would apply to the other Majors which are also predominantly primary aggregate producers.

¹⁴ Tarmac told us that it had increased the proportion of secondary and recycled aggregates it used in asphalt production. Lafarge also told us that it carried out some recycling. Furthermore, Lafarge told us that there were targets for the use of recycled asphalt plantings (RAP) in the production of asphalt. RAP is taken from roads and other surfaces during the process of maintenance and reconstruction. It has additional value since its use reduces the volume of bitumen needed in the production of asphalt.

¹⁵ The presentation by GfK on the survey is available on the [CC website](#).

there is some potential for increased usage of recycled and secondary aggregates (17 per cent of RMX producers could switch a quarter or more of their usage to recycled or secondary aggregates).

(b) For other construction uses (not including asphalt), use of recycled and secondary aggregates is much more prevalent, and half of these customers have switched in the past three years. There is some potential for further switching (26 per cent of customers could switch a quarter or more of their usage to recycled and secondary, and 27 per cent said that they could not switch but that this was because of lack of availability rather than for reasons linked to suitability).

5.20 Finally, we reviewed the comments on substitution between primary and recycled/secondary aggregates that were summarized in the Anglo–Lafarge JV inquiry report.¹⁶ In general, these comments suggested that recycled and secondary aggregates could be used in place of primary aggregates in general construction for low-specification applications, but that they were not generally used in high-specification applications. For RMX and concrete blocks, these comments suggested that recycled and secondary aggregates were not considered to be a close substitute for primary aggregates, but that there was more scope for using recycled and secondary aggregates in the production of asphalt.

5.21 Overall, the evidence shows that there has been a steady growth in the share of total aggregates sales accounted for by recycled and secondary aggregates over the past 20 years (as set out in Figure 5.1), which suggests that over this period, significant volumes of recycled and secondary aggregates have, in practice, been substituted for primary aggregates.

5.22 The evidence also indicates that the extent of substitutability of recycled and secondary aggregates for primary aggregates varies significantly by application. Consideration of the different end-uses for aggregates suggests that while recycled and secondary aggregates are an imperfect substitute for primary aggregates, in that they could not entirely replace primary aggregates in all applications, they are nonetheless an effective substitute for a substantial part of the market (in particular for low-specification direct construction uses, where recycled and secondary aggregates account for almost a half of all aggregates used). Survey evidence (see paragraph 5.19(b)) also indicates that, for general construction uses, substitution has occurred in the past when prices of primary aggregates increased relative to recycled and secondary aggregates.¹⁷ For the production of asphalt, the evidence summarized in paragraph 5.15(c) also suggests a relatively large usage of recycled and secondary aggregates (10 to 20 per cent of all aggregates used). For other uses (in particular, RMX and concrete block production), there seems to be more limited scope for substitution, though we saw some evidence to indicate that recycled and secondary aggregates are increasingly being used for some relatively higher-specification applications.

Conclusion on aggregates product market definition

5.23 Table 5.1 summarizes our assessment of the scope for substitution between crushed rock and sand and gravel (as set out in paragraphs 5.8 to 5.11), and between primary and secondary/recycled aggregates (as set out in paragraphs 5.12 to 5.22), by

¹⁶ See [Anglo–Lafarge JV inquiry report](#), Appendix G, paragraphs 53–59.

¹⁷ This is consistent with the overall increase in the share of recycled aggregates, which seems to be a result of the increasing cost of landfill as a result of the landfill tax, the increase in the aggregates levy and the growing awareness of the availability of recycled materials.

application. For crushed rock and sand and gravel, the evidence indicates significant scope for substitution between different classes of aggregates for applications accounting for a substantial part of total aggregates sales, but with more limited scope for substitution for other applications. The evidence as to whether recycled and secondary aggregates are substitutes for primary aggregates is more balanced. There is significant scope for substitution between recycled and secondary aggregates and primary aggregates for about half of total aggregates sales and limited substitution for the remainder of total aggregates sales.

TABLE 5.1 **Extent of substitution between aggregates by application**

<i>Uses of aggregates</i>	<i>% of total aggregates usage</i>	<i>Substitutability primary/ recycled and secondary</i>	<i>Substitutability crushed rock/ sand and gravel</i>
<i>Use in manufacture of construction products</i>			
Manufacture of RMX	20	Limited	Yes—appear equivalent
Manufacture of concrete products, eg blocks, paving, precast structures, roof tiles	10	Limited	Yes—appear equivalent
Manufacture of asphalt	11	Some scope for substitution	Crushed rock appears generally more suitable but sand & gravel are also used in smaller proportions
<i>Direct construction uses</i>			
Mainly: non-structural fill, structural fill, capping layer, sub-base	50	Yes	Yes
Other (mainly, specialist uses)	8	No use of recycled	

Source: CC, based on data from Tarmac/BDS on proportions used in different applications.

- 5.24 In light of our assessment of substitutability and the overall purpose of market definition for this investigation (as set out in paragraph 5.1), we concluded that it was appropriate to define a relevant product market for all construction aggregates, including crushed rock, sand and gravel and, on balance, recycled and secondary aggregates. For the reasons set out in paragraph 5.6(a), we have not defined separate product markets for different grades of aggregates and we have excluded specialist aggregates, such as rail ballast and high-purity limestone, from the scope of our product market definition.
- 5.25 Our competitive assessment of aggregates markets in Section 6 takes into account the fact that substitutability varies significantly by application and in particular that:
- (a) sand and gravel aggregates are not as widely used in asphalt applications as crushed rock aggregates; and
 - (b) recycled and secondary aggregates are likely to be a close substitute to primary aggregates for lower-specification construction applications, but they are less substitutable for RMX and concrete block production.
- 5.26 We note that this relevant product market definition is different from the definition that was used in the CC’s Anglo–Lafarge JV inquiry report (in which recycled and secondary aggregates were considered to be outside the market for primary aggregates used for construction purposes). In that report, the analysis of the competitive effects

in aggregates markets focused mainly on an assessment of the conditions of competition in the local areas in which the parties to the JV both had primary aggregates sites ('overlap areas'). This assessment also took into account the competitive constraint from outside the market resulting from the existence of local sources of recycled and secondary aggregates in the relevant overlap areas.¹⁸

5.27 In this market investigation, our analysis of aggregates markets is focused on competition in the sector as a whole rather than examining it in specific overlap areas. Therefore we considered it more appropriate to use a wider market definition which includes recycled and secondary aggregates in the relevant product market and to take into account as part of our competitive assessment:

(a) the constraint from secondary and recycled aggregates when these are present in a given geographic market; and

(b) the fact that recycled and secondary aggregates may not be a constraint on primary aggregates for some applications.

Geographic scope of competition

5.28 The consensus view among parties was that aggregates markets were local, although views varied on the precise geographic scope and the appropriate catchment areas to use for competitive analysis. Tarmac told us that, as a starting point for the competitive assessment, 30 miles around a quarry was a reasonable catchment area,¹⁹ whereas Aggregate Industries and Cemex told us that the geographical markets tended to be larger than 30 miles.²⁰ Details of parties' views about the geographic scope of aggregates markets may be found in Appendix 5.1.

5.29 We were told that catchment areas could depend on demographics and other factors that varied locally.²¹ We also noted that some aggregates are transported around the UK by rail, and occasionally by ship, and as a consequence catchment areas for rail- and sea-linked quarries are likely to be much larger than catchment areas for quarries that are not rail- or sea-linked. Rail-linked quarries need to be connected to a depot at the other end of the rail link in order to sell aggregates into a local area at the end of that link, and therefore these quarries are likely to be in competition with other quarries located in the catchment area of the depots which they feed.

5.30 We concluded that aggregates markets were local in nature, but that their precise geographic specification could vary according to a variety of local factors. The geographic dimension of competition is relevant to our competitive assessment of aggregates markets—that is, we need to take into account all the competitive constraints in local areas. We therefore analyse catchment areas for aggregates in Section 6.

Cement

5.31 We set out below our consideration of market definition in relation to cement, both in terms of the product market definition and the geographic scope of the market.

¹⁸ See [Anglo—Lafarge JV inquiry report](#), paragraphs 23 & 24.

¹⁹ [Tarmac reply to the issues statement](#).

²⁰ [Cemex and Aggregate Industries reply to the issues statement](#).

²¹ For example, Cemex told us that local markets would vary in scope and scale due to demographics (different concentration of demand in rural as against urban areas) and topographic features, as a result of which each market should, according to Cemex, be defined on its own terms.

Product market definition

- 5.32 In the Anglo–Lafarge investigation, the CC considered the extent of demand-side (and where appropriate, supply-side) substitutability between:
- (a) different types of (bulk) cement (ie CEM I, CEM II and CEM III);
 - (b) different forms of packaging of cement (ie bulk cement and bagged cement); and
 - (c) domestically-produced and imported cement.
- 5.33 In relation to the first issue, the CC found that there was a degree of demand-side substitutability between cement types, but that the ability and willingness of customers to switch from CEM I to other types of cement differed depending on the application. In relation to supply-side substitution, the CC found that cement producers appeared to have different abilities to source the various cementitious products which are required to produce CEM II and CEM III (ie PFA and GGBS). Subject to the availability of these products (which we discuss in more detail as part of our analysis of GGBS market definition in paragraphs 5.58 to 5.60 and as part of our analysis of the GGBS supply chain in paragraphs 7.251 to 7.298), and provided that the required facilities were in place, producers appeared to be able to switch the production easily from CEM I to other types of cement. The CC concluded that, for the purposes of assessing the Anglo–Lafarge JV, all types of (bulk) cement formed part of the same relevant product market, though, in the competitive assessment, it also considered the competitive constraints arising for CEM I separately.
- 5.34 In relation to the second issue, the CC found that there was very little, if any, demand-side substitutability between bulk and bagged cement. On that basis, the CC concluded that for the purposes of assessing the Anglo–Lafarge JV, bulk and bagged cement belonged to different relevant product markets.
- 5.35 In relation to the third issue, the CC examined the extent to which domestically-produced and imported cement were substitutes for each other. Given that the majority of imported cement is bulk cement, the CC focused on the constraints placed by imported bulk cement on domestic bulk cement rather than on bagged cement. The CC found that, in relation to consideration of the Anglo–Lafarge JV, it was not appropriate to segment the relevant product market into domestic and imported cement on the basis of quality or security of supply differences.
- 5.36 We asked parties for their views on whether the approach taken to product market definition for cement in the Anglo–Lafarge JV report was also relevant for this market investigation. In their replies to our issues statement, Lafarge, Tarmac and Cemex told us that they generally agreed with the approach to cement market definition in the Anglo–Lafarge JV report. Hanson and Aggregate Industries did not comment on cement market definition in their responses to the issues statement.
- 5.37 The main points of detail raised by parties regarding the definition of the relevant markets for cement were as follows:
- (a) Lafarge submitted that the relevant market was all grey cement.²² It did not comment on whether bagged or bulk cement should be defined as separate markets (but this was the view it put forward during the Anglo–Lafarge JV inquiry). Lafarge also argued²³ that additions such as PFA and GGBS should be

²² We understand that all the cement produced in GB is grey cement.

²³ [Lafarge response to updated issues statement](#).

included in the market for bulk cement since they were directly substitutable for clinker in various proportions.²⁴

- (b) Tarmac told us that all types and grades of cement were in the same market because they were demand- and supply-side substitutes, that bagged and bulk cement could be considered to be in separate markets because of lack of any substitution from the demand side, and that imported cement was in the same product market as cement produced in GB.
- (c) Cemex told us that there was a single product market for grey cement, with all available grades and specifications forming a single continuum of customer demand. According to Cemex, there was also extensive supply-side substitution, because most British cement production sites had the necessary milling, blending and storage facilities to be able to adjust production between CEM I, II and III. Cemex told us that, regardless of whether or not bulk and bagged cement comprised a single market or two separate markets, the majority of cement producers could produce and sell cement in either form after making a relatively inexpensive investment in bagging machinery.
- (d) Cemex also told us that PFA and GGBS posed a significant competitive constraint on grey cements, even though they could not be used on a stand-alone basis as a direct substitute for cement. According to Cemex, this was because many RMX and concrete product producers (including sites owned by Cemex) purchased PFA and GGBS directly and 'self-blended' CEM II or III as required. For example, in relation to Cemex's own RMX production, Cemex told us that purchases of GGBS and PFA comprised [X] per cent and [X] per cent respectively of total purchases of cementitious products. It said that, as a consequence, any assessment of the relevant market for cement would be misleading and incomplete without a full consideration of these products.²⁵
- (e) Cemex told us that imported cement and cement produced in GB were in the same product market

5.38 In conclusion, among those parties that expressed views, there appears to be broad agreement with the approach taken to the product market definition for cement used in the Anglo-Lafarge JV inquiry (as set out in paragraphs 5.32 to 5.35 above) and we therefore saw no reason to depart from that approach in this investigation. We therefore concluded that the product market containing cement for the purposes of this investigation should be defined as follows:

- (a) All types of bulk cement form part of the same relevant product market, in light of the scope for demand-side substitution (depending on the application) and supply-side substitution between the different types of bulk cement. As noted above, there are constraints on the availability of the inputs required to produce CEM II and CEM III (ie PFA and GGBS), and there are different competitive constraints in relation to these inputs than in relation to the supply of CEM I. This led us to also consider the competitive constraints arising for cement and GGBS separately.
- (b) Bagged cement and bulk cement can be defined as separate markets because they are bought by different types of customers (ie there is very little demand-side substitution). There is scope for supply-side substitution between bagged and

²⁴ We set out our consideration of the appropriate market definition for GGBS in paragraphs 5.42 to 5.94.

²⁵ See previous footnote.

bulk cement, though this would be limited in relation to those cement producers who do not have a bagging facility.

(c) Imported cement and cement produced in GB are in the same relevant product market.

5.39 We noted, however, the submissions by Cemex and Lafarge that, given that GGBS and PFA are inputs to the production of blended cements such as CEM II and CEM III, the analysis of competition in the market for grey cement should also take into account the role played by GGBS and PFA in that market, though Cemex also pointed out that PFA and GGBS could not be used on a stand-alone basis as a direct substitute for cement. We consider the appropriate market definition for GGBS in paragraphs 5.42 to 5.94 and competition in the GGBS supply chain in paragraphs 8.435 to 8.497.

Geographic scope of competition

5.40 Although the Anglo–Lafarge JV report did not conclude specifically on the geographic scope of cement markets, the competitive assessment in that report focused on GB, while also assessing the constraints within GB from imported cement. We did not receive any comments that disagreed with this overall approach:

(a) Tarmac submitted that the geographic market was at least national.

(b) Cemex submitted that the relevant geographic market for the supply of cement comprised at least GB. Cemex noted that Cemex and its competitors were able to serve customers across this territory from only a few plants, from which cement was transported to wherever it was required.

5.41 We concluded that for the purposes of this investigation, we would focus primarily on competition at a GB level, taking into account the constraints from imported cement as part of our competitive assessment in Section 8.

GGBS

5.42 GGBS is an input to the production of CEM III,²⁶ and PFA is an input to the production of CEM II. CEM II and CEM III can either be supplied directly by cement producers to their customers (mainly, RMX and concrete block manufacturers) or can be produced by RMX and concrete block producers themselves through blending of CEM I with PFA or GGBS directly at the plant.

5.43 In our issues statement, we indicated that we would include in our assessment consideration of whether the markets for the inputs to the production of cement (including PFA and GGBS) affect competition in the markets for cement.²⁷ We gathered evidence on the supply of GGBS and PFA in GB, and found that there were a number of alternative sources of GB-produced PFA; however, there was only one source of GB-produced GGBS. In addition, the evidence we gathered showed that GGBS could be substituted for CEM I in higher proportions than PFA due to its greater cementitious properties. For these reasons, we focused our assessment on GGBS rather than PFA and defined a relevant market for GGBS, but did not define a relevant market for PFA.

²⁶ To a lesser extent, GGBS can also be used as an input to the production of CEM II.

²⁷ Paragraph 32 of our [issues statement](#).

5.44 We set out below our consideration of the market definition in relation to GGBS, first in relation to product market definition and then in relation to the geographic scope of the market.

Product market definition

5.45 As explained in Section 2 of this report, GGBS and PFA are materials that can be added to cement made from clinker to produce different types of grey cement, or to replace a proportion of cement made from clinker when making concrete. Thus GGBS and PFA can be used either:

(a) by cement producers, to replace part of the ‘clinker’ element of cement to produce CEM II and CEM III (‘blended cements’); there are three main types of cement used in GB:

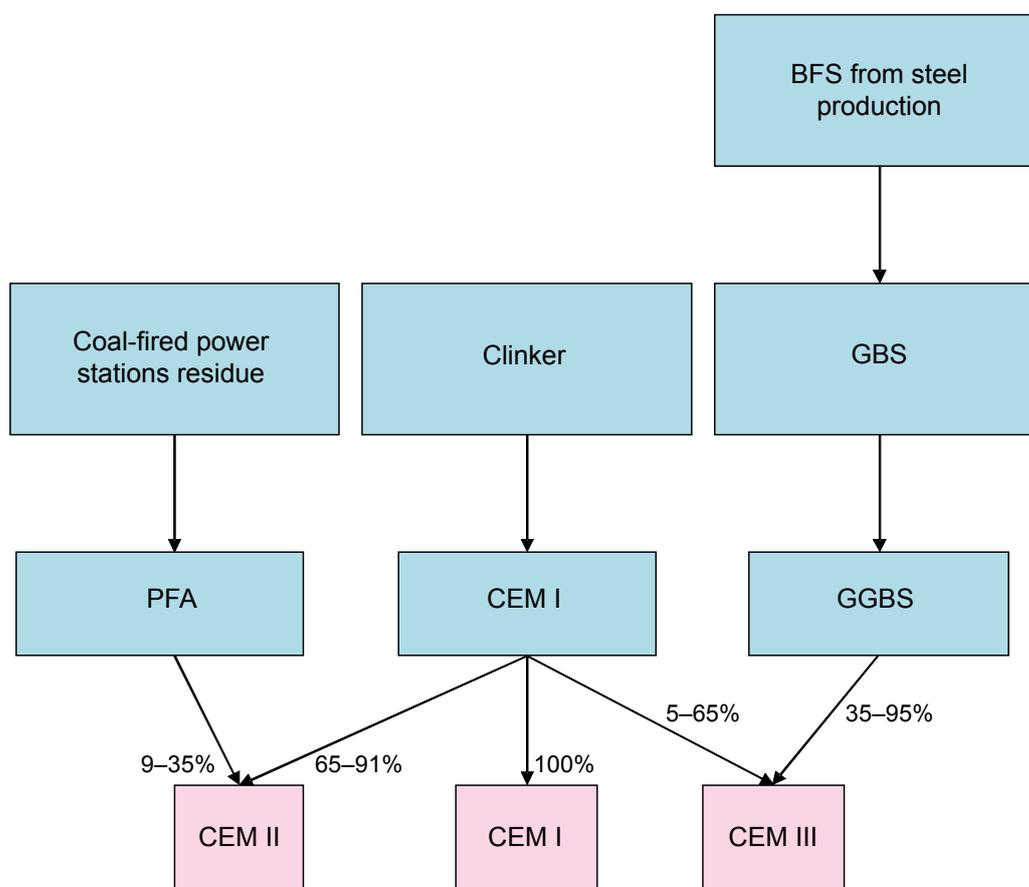
- CEM I, which is made from ground cement clinker and a small percentage of gypsum to control the material’s setting time when mixed with water;
- CEM II, which contains between 6 and 35 per cent PFA, limestone or GGBS; and
- CEM III, which contains between 36 and 95 per cent GGBS; or

(b) directly by RMX or concrete block producers, to mix with CEM I in order to create customized mixes of concrete (which results in the production of concrete that is effectively identical to concrete made from pre-blended CEM II or CEM III).

5.46 Figure 5.2 illustrates the interrelations between GGBS, PFA and CEM I.

FIGURE 5.2

Interrelations between GGBS, PFA and CEM I



Source: CC.

5.47 Therefore, GGBS and PFA are both possible ‘partial substitutes’ to CEM I in the manufacture of CEM II and CEM III, or possible partial substitutes to CEM I in the production of RMX with blended cements, though there are limits to the extent to which they can be used to substitute for CEM I, and there are also differences between the extent of substitutability of GGBS and PFA, among others because GGBS can be substituted for CEM I in higher proportion than PFA.

5.48 In relation to product market definition, we therefore examined whether there is a separate product market for GGBS, or a wider market including PFA, CEM I or all cementitious products. In order to conduct our market definition analysis for GGBS, we used the hypothetical monopolist test. The Guidelines set out that the hypothetical monopolist test is a tool which can be used to identify effective substitutes and to check that the market is not defined too narrowly. The principle behind it rests on defining a market as a product, or collection of products, a sole supplier of which hypothetically imposes a small but significant non-transitory increase in price.²⁸

5.49 As the starting point for considering the relevant product market definition for GGBS, we considered it appropriate to focus on GGBS as the narrowest possible product market. This is because (a) the production process for GGBS is significantly different from that of cement and PFA; (b) GGBS has different cementitious properties from

²⁸ CC Guidelines, paragraph 138.

PFA and CEM I, resulting in different technical properties and greater environmental benefits in certain applications compared to PFA and CEM I, which suggests that it may not be fully substitutable to CEM I and/or PFA; and (c) GGBS can be substituted for CEM I in higher proportions than PFA. In addition, as set out in paragraph 5.43, there is a single producer of GGBS in GB.

Submissions from the parties on the product market for GGBS

- 5.50 Hanson told us that the relevant product market for GGBS included at least CEM I and PFA, so that GGBS was part of a wider cementitious products market. Hanson told us that the share of GGBS in this wider cementitious product market was below 15 per cent.
- 5.51 Hanson told us that:
- (a) CEM I was practically always a direct, strong substitute to GGBS, as CEM I could fully replace GGBS in almost all applications. It noted that GGBS was marketed as a direct substitute to using CEM I in blends. It told us that as a result, CEM I pricing directly constrained the pricing of GGBS, and that if prices of GGBS rose relative to CEM I, customers could and did switch to increasing the proportion of CEM I they used in blends. It told us that the pricing tool it used for GGBS showed that CEM I prices constrained GGBS prices. It also provided examples of customers switching, or threatening to switch, away from GGBS to CEM I.
 - (b) PFA was a strong, direct and regular substitute to GGBS as it could fully replace GGBS in almost all applications, and PFA and PFA blends impacted directly on the pricing of GGBS. It pointed to the pricing evidence and empirical evidence to support this (see paragraph 5.53 below).
 - (c) There was an effective constraint from imports of GGBS and there were import terminals with spare capacity.
- 5.52 There were a range of other products that could replace GGBS in certain applications and so provided additional constraints on GGBS, such as the pre-blended GGBS product produced by Lafarge Tarmac, limestone fines,²⁹ Cenin³⁰ and silica fume/microsilica.
- 5.53 In support of its views, Hanson provided evidence on:
- (a) its pricing tool for GGBS;
 - (b) internal documentary evidence; and
 - (c) a survey it conducted with RMX customers.
- 5.54 Hanson also told us that the CC should adopt the same market definition for GGBS in the UK as the European Commission did in its decision on the merger between Heidelberg Cement and Hanson in 2007³¹ or, where the CC deviated from the

²⁹ We note that, unlike GGBS and PFA, limestone does not have cementitious or pozzolanic properties and therefore, whilst the specification for CEM II provides for clinker to be blended with limestone to make CEM II, limestone is unlikely to be a substitute for PFA and GGBS. We therefore do not consider limestone as a potential substitute for GGBS in the remainder of this section.

³⁰ We note that the products sold by Cenin do not at present conform with the existing CEM II and CEM III standards, and therefore would not be able to be used by RMX producers as a substitute for GGBS or PFA at present. We therefore do not consider Cenin as a potential substitute for GGBS in the remainder of this section.

³¹ Case COMP/M.4719 HeidelbergCement/Hanson, decision dated 7 August 2007.

European Commission's position, it should be based on compelling contrary evidence.³²

- 5.55 We review the evidence provided by Hanson, as well as other further evidence, in the remainder of this subsection.

Summary of the views from customers and producers of cementitious products on the substitutability between GGBS-blended cement and PFA-blended cement

- 5.56 We were told that blending PFA or GGBS into CEM I was cheaper for an RMX producer than using just CEM I. We understand that in many cases, RMX will be produced using some PFA or GGBS, or pre-blended CEM II/III. Most estimates we received from RMX producers (including the Majors) suggest that GGBS or PFA is used in around 80 per cent of all RMX that is sold to customers.³³
- 5.57 Views on the substitutability between PFA and GGBS, and on their relative merits, varied (see Appendix 5.3). We were told by some parties that PFA tended to be of more variable quality, but that it was available from more sources and generally cheaper, whereas the supply of GGBS was more restricted. Some parties told us that GGBS had superior cementitious properties. We were also told that there were pros and cons for both GGBS and PFA, and that each had its own merits depending on the particular application.

Availability of PFA and relative sales of GGBS and PFA in GB

- 5.58 In assessing the scope for substitution between GGBS and PFA, we also had regard to the availability of PFA and to the total amount of GGBS sales in GB relative to PFA sales in GB.
- 5.59 The evidence we obtained on the size of PFA sales in GB are presented in Appendix 5.3. We found that total sales of PFA for cementitious use in GB (either as an input to the production of CEM II or used by RMX producers to mix with cement at the RMX plant) was likely to be in the region of 950,000 tonnes in 2011. This compared with total sales of GGBS of around 1,400,000 tonnes in 2011 in GB. Therefore, PFA usage in GB is equivalent to about two-thirds of total GGBS usage in GB.
- 5.60 We review evidence on the production process for PFA and availability of PFA in Appendix 5.3. We noted that over the next few years, it was anticipated that UK PFA production would reduce significantly due to the closure of UK coal-powered stations, as a result of various EU environmental directives; though Hanson told us that this reduction may not be as substantial as initially anticipated because the EU regulations had adopted a lower threshold for the use of biomass production than had previously been anticipated, and Hanson understood the industry to be revisiting the previously scheduled closures as a result of co-firing and co-combustion (coal and biomass) now being understood to meet the applicable standards.³⁴ Nonetheless, we note that it remains the case that coal production is likely to reduce in the next few years resulting in lower availability of PFA, which would affect the size of the PFA supply. This, in turn, is likely to reduce the possibilities for customers to switch between GGBS and PFA.

³² Hanson's response to the provisional findings report dated 16 July 2013, paragraph 28.11.

³³ Hanson told us that PFA or GGBS was used in about 80 per cent of RMX produced. Newark Concrete told us that 95 per cent of its customers purchased CEM II and did so because of the cost saving (see: www.competition-commission.org.uk/assets/competitioncommission/docs/2011/anglo-american-lafarge/summary_of_hearing_with_newark_concrete.pdf).

³⁴ Hanson response to Addendum, paragraph 3.4.

Evidence on the pricing of GGBS and constraints on prices of GGBS

- 5.61 A key aspect to assessing substitutability between different products is the extent to which customers would switch to PFA and/or CEM I in response to an increase in the price of GGBS. We therefore assessed evidence on the pricing of GGBS and how it compares with pricing of potential substitutes (PFA and CEM I), in order to understand the constraints on pricing of GGBS and the extent to which customers would switch to PFA or CEM I in response to an increase in the price of GGBS.
- 5.62 We compared the prices of CEM I, CEM II (predominantly a blend of CEM I and PFA) and CEM III (predominantly a blend of CEM I and GGBS). We also compared the costs to RMX producers of producing RMX using pure CEM I, a blend of CEM I and GGBS (effectively creating a CEM III equivalent RMX), or a blend of CEM I and PFA (effectively creating a CEM II equivalent RMX). The details of our comparisons are presented in Appendix 5.3. We found that the costs of producing RMX and blended cement with PFA were in the same range as the costs of producing RMX and blended cement with GGBS. This suggested to us that the current prices of GGBS may be constrained by the combination of PFA and CEM I prices, ie set to the level where mixing GGBS with cement is only marginally more expensive than mixing it with PFA. This suggested that, at current prices, a small increase in the price of GGBS could result in some switching to PFA and cement (because PFA can only be used in much smaller proportions, we would expect that a reduction in demand of GGBS by 1 tonne would result in substitution to increased volumes of both PFA and CEM I to produce equivalent blended cement).
- 5.63 We also analysed evidence provided by Hanson on the way in which it set prices for GGBS, and examples provided by Hanson of the pricing tool regularly used by its sales team to set prices of GGBS to individual customers. This pricing tool compares the prices to the given customer of:
- (a) producing RMX using pure CEM I;
 - (b) producing RMX using a blend of CEM I and PFA; and
 - (c) producing RMX using a blend of CEM I and GGBS.
- 5.64 Hanson told us that the total prices to the customers of producing RMX with pure CEM I or with a blend of PFA and CEM I were borne in mind when its salespersons calculated the price for GGBS which would make it cost-effective for the customer to purchase GGBS rather than PFA or pure CEM I, and that this price was used to begin the negotiation with the customer. Hanson told us that this clearly showed that both CEM I prices and PFA prices impacted GGBS prices directly.
- 5.65 We reviewed the five examples provided by Hanson of its pricing tool for GGBS.³⁵ Out of these five examples, in four cases the starting negotiation price for GGBS appeared to have been set with reference to the cost to the customer of switching to pure CEM I and/or blending CEM I with PFA, and in one case the starting negotiation price for GGBS appeared to have been set with reference to the cost to the customer of purchasing pure CEM I and/or imported GGBS from Paragon. For these examples, the maximum price was highest for the customer whose next best alternative appeared to be to switch to imported GGBS than for the customers whose next best alternative appeared to be switching to PFA. We agreed that this pricing tool suggested that the prices of GGBS set by Hanson to individual customers were currently

³⁵ The examples were selected by Hanson; Hanson told us that, in its view, these examples were representative of Hanson's experience more generally.

directly constrained by the pricing of PFA and CEM I. This was also consistent with the other evidence we reviewed on the prices of GGBS (see paragraphs 5.61 and 5.62).

- 5.66 The examples provided by Hanson of its pricing tool also suggested that:
- (a) The pricing of GGBS to individual customers did not appear to take into account the costs of delivering GGBS to individual customers—in other words, prices to any given customer appeared to depend mainly on prices of PFA and CEM I alternatives, rather than on the specific costs of delivering GGBS to this particular customer.
 - (b) The prices of GGBS were set individually to customers so as to realize, for each customer, a price which is close to the maximum price that this customer will be willing to pay before switching to alternatives (reservation price).
 - (c) From the small sample of examples provided, it appeared that costs of switching to PFA and CEM I or to pure CEM I were a stronger constraint on Hanson's GGBS prices than prices of purchasing imported GGBS.
- 5.67 We also analysed evidence on the changes in monthly and annual prices of GGBS, PFA and CEM I between 2007 and 2011. We found that the prices of GGBS were highly correlated with CEM I prices, but that the prices of PFA were less correlated with either CEM I or GGBS prices. This suggested to us that GGBS and CEM I may be closer substitutes than GGBS and PFA. The details of our analysis are presented in Appendix 5.3.
- 5.68 The analysis of prices also showed that GGBS prices had increased relative to the prices of CEM I and PFA from 2009 onwards. Demand for GGBS reduced more than demand for cement in 2008, 2009 and 2010, as can be seen in Appendix 7.6, Table 1. Although this analysis is high level and there could be a number of factors explaining the differences in changes in demand for cement and GGBS, the fact that demand for GGBS reduced relative to demand for cement when the price of GGBS increased relative to the price of cement and PFA could suggest some substitution taking place from GGBS to cement and PFA.

Further evidence provided by Hanson

- 5.69 Hanson provided results of market research by B2B that it commissioned in 2010 on GGBS. Hanson told us that the purpose of this research was to inform the marketing and brand name of Hanson's GGBS business (REGEN) such that the product could perform better against its competitor products such as cement and PFA. As part of this research, a survey of RMX producers was conducted. RMX producers were asked what alternatives there were to using GGBS as a cement additive, substitute or replacement in RMX (cement itself was not offered as an option to the respondents in the survey), and whether they had bought any of these alternatives in the previous two years. Just under 60 per cent of respondents (base 50) identified PFA as an alternative, and almost 40 per cent had bought PFA in the previous two years. Other alternatives identified by respondents were microsilica (about 20 per cent), limestone (about 8 per cent) and metakaolin (about 5 per cent). RMX producers were also asked whether they would increase their use of PFA and GGBS in the future; 53 per cent said they would grow their use of PFA in the future (base 50), against 26 per cent who said they would grow their use of GGBS in the future (base 29).
- 5.70 Hanson also provided a selection of emails from the inbox of [REDACTED], Hanson Cement's Bulk Sales Director. Our review of these emails suggested that, in sales negotiations

with customers over GGBS, the threat of switching to PFA was the most common threat used (majority of cases), though there were also examples of customers threatening to switch to CEM I and to imported GGBS from Paragon.

- 5.71 Hanson additionally gave us examples of situations where it had lowered its GGBS price in order to defend an existing customer. There were examples of GGBS customers defended against PFA, cement and GGBS imports.

Relevant product market for GGBS: the hypothetical monopolist test

- 5.72 As set out above, we used the hypothetical monopolist test in order to assess the relevant product market for GGBS, starting with GGBS as the narrowest possible market (for the reasons explained in paragraph 5.49 above). In this possible market, Hanson is the sole producer of GGBS in GB. We therefore examined whether there was evidence that Hanson had the ability to raise prices in GGBS profitably in order to assess whether the hypothetical monopolist test was satisfied.
- 5.73 Our analysis of GGBS profitability found that Hanson's profitability for the supply of GGBS in GB was well in excess of the estimate of Hanson's cost of capital, in each year 2007 to 2012, and for all of the measures of profitability we considered (see Appendix 7.16). This strongly suggests that Hanson, as the sole producer of GGBS in GB, is able profitably to raise prices of GGBS above those that we would expect in a competitive market. In other words, the fact that Hanson, as the sole producer of GGBS in GB, is able to earn excess returns on GGBS strongly suggests to us that it is profitable to monopolize the GGBS market, and therefore that there is a distinct product market for GGBS.
- 5.74 We therefore find that:
- (a) There is strong evidence that a sole producer of GGBS in GB has been able to earn profits in excess of ROCE, strongly suggesting that a narrow product market for GGBS satisfies the hypothetical monopolist test.
 - (b) In relation to the extent of substitutability between GGBS blended cements on the one hand, and PFA blended cement and CEM I on the other hand, we find that:
 - (i) the pricing evidence, the evidence from Hanson emails and the evidence by Hanson on threats to switch that we reviewed suggests that current GGBS prices are likely to be constrained by CEM I prices and (to a lesser extent) PFA prices; and
 - (ii) Hanson takes into account the pricing of PFA and CEM I when setting GGBS prices to individual customers.
- 5.75 The fact that GGBS prices are currently constrained by CEM I and/or PFA prices is therefore likely to be a consequence of the fact that Hanson is the sole producer of GGBS in GB, and has therefore increased prices of GGBS to levels at which CEM I and/or PFA blended cements become a substitute to GGBS-blended cements. In other words, the existing level of price substitutability between GGBS and CEM I/PFA may be the consequence of exercise of market power rather than indicating that GGBS is part of a broader cementitious product market. The fact that, if there is exercise of market power, using prevailing prices can lead to defining markets too broadly (the 'cellophane fallacy') is explained in the CC guidelines:

There are some practical difficulties in using the [hypothetical monopolist test] in market investigations. If significant market power is already

being exercised, using prevailing prices can lead to defining markets too broadly and possibly to an incorrect inference that significant market power does not exist. In theory, the [hypothetical monopolist test] could be implemented in the presence of market power using notional competitive prices, but in many cases it is difficult to assess what those prices would be. There is also a risk that using a notional benchmark in effect assumes the existence of significant market power as part of the framework within which the competitive assessment is being undertaken.³⁶

- 5.76 We also note that the other evidence we examine further in Section 8, in our competitive assessment of the supply of GGBS, also indicates that the GGBS market is not fully competitive and that Hanson is able to exercise market power.³⁷
- 5.77 This is also consistent with the approach taken by Hanson through its pricing tool, where prices to individual customers appear to be constrained mainly by the costs to customers of switching to CEM I or CEM I and PFA. If there were several competing producers of GGBS in GB, we would expect these to be more focused on competing between themselves for selling GGBS to GB customers, rather than on competition with CEM I and PFA. We would therefore expect that, if prices for GGBS were at competitive levels, the extent of substitution between GGBS on the one hand and CEM I and PFA on the other would be significantly more limited than that which we observe at current GGBS prices.
- 5.78 Therefore, in light of our analysis of GGBS profitability, we consider that a monopolist supplier of GGBS would be able profitably and sustainably to raise prices of GGBS above competitive levels, and in this case there is direct evidence that Hanson has been able to do so as the sole producer of GGBS in GB. The evidence we have reviewed on pricing and substitution between GGBS on the one hand and PFA and CEM I on the other is affected by the fact that current GGBS prices are likely to be above the prices that would prevail in a well-functioning market, because Hanson is the sole producer of GGBS. In a well-functioning market with several competing producers of GGBS in GB, we would expect GGBS prices to be lower and substitutability with non-GGBS alternatives to be more limited as a consequence of these lower GGBS prices. We therefore consider that there is a distinct relevant product market for GGBS, which is closely related to cement and PFA, given that GGBS is both a partial substitute to cement and PFA, as well as an input into the production of CEM III and of downstream cement products (such as RMX and other concrete products).

Parties' comments on the relevant product market definition for GGBS in response to our Addendum to provisional findings

- 5.79 Hanson told us, in its response to the Addendum to provisional findings, that our analysis of product market definition had focused on price substitution and omitted to recognize the functional interchangeability between GGBS, PFA and also cement. It further argued that GGBS and PFA were regularly substituted, with both products providing similar benefits on the key characteristics of durability and resistance in RMX applications. Hanson argued that the CC had declined to recognize how customers switched between these products naturally, as opposed to undertaking substitution artificially only due to price pressures.³⁸ Within a broader cementitious

³⁶ CC Guidelines, [paragraph 139](#).

³⁷ See paragraphs 8.435–8.497. See also the internal documentary evidence reviewed in Appendix 7.6, paragraphs 12–19, where we found internal documentary evidence that Hanson [redacted].

³⁸ [Hanson response to the Addendum](#), paragraph 4.6.

market, Hanson told us that its share of GGBS production was approximately 10 per cent.³⁹

5.80 While there is evidence of functional substitutability between GGBS, PFA and CEM I, the main aim of the market definition exercise was to understand the constraints on GGBS in terms of pricing, using the hypothetical monopolist test.⁴⁰ As we set out above, we found that, at the current levels of GGBS, PFA and CEM I prices, GGBS prices are currently constrained by CEM I and PFA pricing; however, this is likely to be a consequence of the exercise of market power by Hanson.

5.81 Hanson told us that it had a number of significant concerns about our reliance on the cellophane fallacy. It told us that, where this concept was invoked by a competition authority to dismiss otherwise clear evidence of actual and natural substitution, it should be accompanied by a high standard of proof.⁴¹ It made the following comments on our reasoning:

(a) Hanson argued that there was a significant risk of confirmation bias in invoking the cellophane fallacy, because the analysis implicitly presumed a narrow market as a step to using profitability analysis to invoke the cellophane fallacy. Hanson noted in this respect that the CC Guidelines made clear that one condition which must be present before profitability analysis could be relied upon to imply a limitation in the competitive process was that profitability of firms representing a substantial part of the market had exceeded the cost of capital over a sustained period.⁴²

(b) Hanson argued that our profitability analysis was the only tangible evidence that the cellophane fallacy might be in action. It argued that we had both overstated and misinterpreted the differential between ROCE and WACC.⁴³ It also argued that, even if a differential between ROCE and WACC were to exist, this would not necessarily imply that the current price was above the competitive price, because standard economic models showed that, in a competitive market, more efficient firms could make supernormal profits where the less efficient marginal firm made only normal returns. Hanson argued that GGBS production was relatively lower cost than cement production and therefore that within a broader cementitious product market, the GGBS producer was the infra-marginal producer which could potentially earn supernormal profits despite being a price taker.⁴⁴

(c) Hanson also told us that our reasoning that the price for GGBS that would prevail in a situation where there were several competing producers of GGBS in GB would be lower than the current price did not take into account the fact that there were binding supply constraints on GGBS production (such as a finite amount of BFS). Because of these capacity constraints, Hanson argued that the price that would arise with two or more competing GGBS producers in GB would be the same as the current price, at which substitution was taking place with cement and other cementitious products.⁴⁵ Hanson⁴⁶ cited evidence from our provisional decision on remedies⁴⁷ in support of its position. Therefore, Hanson argued that the CC could not assume the competitive price would be below the current price,

³⁹ We note that, within a broader cementitious product market, Hanson's share would be substantially above 10 per cent because Hanson is also one of the top three cement producers in GB.

⁴⁰ See CC Guidelines, [paragraph 138](#), which explains the hypothetical monopolist test.

⁴¹ [Hanson response to the Addendum](#), paragraph 4.12.

⁴² *Op cit*, paragraphs 4.15–4.17.

⁴³ We consider Hanson's comments on our profitability analysis in GGBS in Appendix 7.16.

⁴⁴ [Hanson response to the Addendum](#), paragraphs 4.18–4.20.

⁴⁵ *Op cit*, paragraphs 4.21–4.26.

⁴⁶ *Op cit*, paragraph 4.25.

⁴⁷ [Provisional decision on remedies](#), Appendix 1, paragraph 36.

and as it would not, the proposed divestment remedies would be ineffective to remedy any alleged AEC.

(d) Hanson also argued that it was not clear that it was conceptually valid to use the cellophane fallacy in this case, because the idea behind the cellophane fallacy was that, as the price of a product with no substitutes rises, products considered inferior for the task are brought into play because the product has become too expensive. It argued that conceptually, this did not work for GGBS because GGBS was not inherently superior to CEM I or PFA for the vast majority of tasks, and because it was not more expensive than the alleged inferior substitute of cement. Therefore Hanson argued that the CC should reconsider the use of the cellophane fallacy at first principles.⁴⁸

5.82 We consider each of Hanson's arguments below.

5.83 In relation to the confirmation bias and circularity in the reasoning raised by Hanson at point (a), we note that, in any assessment of product market definition, there is a judgement to make on the narrowest possible market from which the assessment will start. However, we disagreed with Hanson that our starting point as the narrowest possible market should be all cementitious products rather than GGBS. Indeed, as we set out above in paragraph 5.49, (i) the production process for GGBS is significantly different from that of cement and PFA; (ii) GGBS has different cementitious properties from PFA and CEM I, resulting in different technical properties and greater environmental benefits in certain applications compared with PFA and CEM I, which suggests that it may not be fully substitutable to CEM I and/or PFA; and (iii) GGBS can be substituted for CEM I in higher proportions than PFA. In addition, as set out above (see paragraph 5.43), there is a single producer of GGBS in GB. For these reasons, we thought it was logical to start with GGBS as the narrowest possible product market and to assess profitability evidence for GGBS. For these reasons, we did not agree that there was circularity or confirmation bias in our reasoning.

5.84 In relation to Hanson's argument that any supernormal profits for GGBS were explained by the fact that it was a more efficient producer of cementitious products within a broader cementitious product market (point (b) above), we did not agree that the model to which Hanson referred as explaining these supernormal profits was applicable to a possible broader cementitious products market. There were two main reasons for this: first, the model which Hanson referred to in order to explain supernormal profits is a model of competition between providers of homogeneous products. It is difficult to reconcile such a model with competition between imperfect substitutes (which is the case with GGBS and CEM I), in particular given that these imperfect substitutes have different price levels. Indeed, in the model referred to by Hanson, the reason why the most efficient producers are able to earn supernormal profits is because they benefit from the high price ceiling set by the least efficient producer. However, in the case of GGBS, it is priced substantially below cement and therefore the binding constraint on the pricing of GGBS is not directly the costs of the least efficient cement producer.

5.85 In relation to Hanson's argument that our reasoning did not take into account the fact that there were binding supply constraints on GGBS production (point (c) above), we do not consider that this is relevant to our assessment of market definition,⁴⁹ and

⁴⁸ [Hanson response to Addendum](#), paragraphs 4.28 & 4.29.

⁴⁹ We considered that, even if the ability of Hanson to charge high prices for GGBS were partly or largely a result of current supply constraints, it remained the fact that the analysis showed that a sole producer of GGBS was able profitably to raise prices for GGBS, ie that the hypothetical monopolist test was satisfied in relation to a narrow GGBS product market.

consider this comment in our assessment of competitive effects in GGBS (paragraphs 8.450 to 8.457).

- 5.86 With regard to Hanson's argument that it was not clear that it was conceptually valid to use the cellophane fallacy in this case, because GGBS was not inherently superior to CEM I or PFA (point (d) above), we disagreed with Hanson. The existence of a cellophane fallacy does not depend on the product in question being inherently superior to other potential substitutes; rather, it depends on the relationship between the pricing of products and their perceived quality. In other words, our reasoning was that, if GGBS prices were lower relative to cement, we would observe less substitution to cement in response to increases in prices of GGBS because the price of GGBS relative to its perceived quality would make it a more attractive product compared with cement.
- 5.87 Lafarge Tarmac told us, in its response to the Addendum to provisional findings, that the cellophane fallacy occurred only when competitively priced products were analysed in relation to a product which was priced at monopolistic or above-competitive prices, potentially leading to too broad a market being defined. It noted that the CC had provisionally concluded that GGBS prices were not competitive and that CEM I prices were not competitive.⁵⁰ We agreed with Lafarge Tarmac that, in principle, if both cement prices and GGBS prices are above competitive levels, this may affect the amount of substitution between GGBS and cement. However, in order to conduct the market definition for GGBS, we considered that it would be appropriate to take the existing prices of cement as given.⁵¹
- 5.88 Lafarge Tarmac told us that we were wrong in concluding that Hanson's current profitability in GGBS did not prove that there would be no interrelationship between GGBS and CEM I and PFA even if the prices of GGBS were set at competitive levels. It told us that, if the price of GGBS were lower, it would expect that substitution between CEM I, GGBS and PFA would continue because the functional interrelationship between these products would remain, and because environmental considerations incentivized the use of CEM I alternatives. Lafarge Tarmac further argued in this respect that the interrelationship between GGBS, CEM I and PFA was dynamic and that the approach we had taken in the addendum was premised on the view that the relationship was static.^{52,53}
- 5.89 We did not agree with Lafarge Tarmac's interpretation of our market definition exercise. We considered that, because GGBS prices are above competitive levels, this would influence the rate of substitution between GGBS and CEM I, and would result in GGBS prices being constrained mainly by CEM I prices at current levels. This does not mean that, if prices of GGBS were lower, there would not be substitution between GGBS and cement. Indeed, if prices of GGBS were lower, we would expect GGBS prices to act more as a constraint on CEM I prices, ie driving substitution from CEM I to GGBS.
- 5.90 Lafarge Tarmac also submitted that it was inconsistent to conclude that there was a relationship between the prices of GGBS and cement, whilst concluding that there

⁵⁰ [Lafarge Tarmac response to the Addendum](#), paragraph 12.

⁵¹ We also note that, as set out in our calculations of the detriment for GGBS and cement, we found that the difference between current prices and prices that we would expect in a well-functioning market was significantly larger in the case of GGBS than in cement.

⁵² [Lafarge Tarmac response to the Addendum](#), paragraphs 13–16.

⁵³ As evidence of the dynamic relationship between GGBS, PFA and CEM I, Lafarge Tarmac submitted evidence on the use of GGBS in other EU countries, which showed that in other EU countries there were different rates of substitution between GGBS, PFA and CEM I as a consequence of the different dynamics at play.

was a separate product market for GGBS.⁵⁴ We did not agree that there was an inconsistency: as set out in the previous paragraph, we expected that, if prices of GGBS were lower as a result of competition between GB producers of GGBS, we would expect GGBS prices to exert more of a constraint on CEM I prices than they currently do.

Geographic scope of competition

5.91 The geographic market for the supply of GGBS is likely to be very similar in scope to the geographic market for cement. The economics of transportation of GGBS are likely to be very similar; if anything, transport costs may represent a larger proportion of the overall price of GGBS because GGBS is relatively cheaper than cement (which could result in narrower geographic markets). We therefore focus primarily on a GB-wide market for GGBS (as for cement), taking into account the fact that some of the GGBS which is sold in GB is imported, though we note that such imports remain limited.⁵⁵ In this relevant market, our analysis indicates that Hanson had a market share of 90 per cent in 2011, the remaining 10 per cent being accounted for by imported GGBS.

EC decision on the Heidelberg/Hanson merger

5.92 Hanson told us that there was precedent on the UK GGBS market definition in the European Commission decision on the Heidelberg/Hanson merger (2007).⁵⁶ It submitted, in its response to the Addendum to provisional findings, that a finding that GGBS is part of a broader cementitious market would be consistent with the European Commission's findings in the Heidelberg/Hanson merger decision.⁵⁷

5.93 We summarize the assessment of the European Commission on product and geographic market definition in the context of the Heidelberg/Hanson merger in Appendix 5.3. In that decision, one of the questions was whether the merger between Heidelberg (a cement producer in GB) and Hanson (a GGBS producer in GB, with no cement operations) might raise competition concerns.

5.94 Overall, the assessment on market definition in the decision is consistent with the views that we summarized in paragraphs 5.56 and 5.57 in relation to the extent to which GGBS, PFA and CEM I are substitutable. We note that the context for our assessment of market definition is different from that of the European Commission: we have looked at the market in the context of a market investigation, which considers a different test from that considered by the European Commission, namely the incremental change from the merger between these two parties. We also note that we are examining the question of market definition six years after the merger decision, that the European Commission did not conclude on the precise product market and that the European Commission did not use the hypothetical monopolist test in its assessment of market definition for this decision. We therefore concluded that the 2007 European Commission decision would not lead us to amend our analysis in respect of the product and geographic market for GGBS.

⁵⁴ [Lafarge Tarmac response to the Addendum](#), paragraph 17.

⁵⁵ As set out in Table 7.20, imported GGBS accounted for about 10 per cent of sales of GGBS in GB in 2011.

⁵⁶ *Case No COMP/M.4719 – Heidelberg Cement/Hanson*, dated 7 August 2007. Full text available at: http://ec.europa.eu/competition/mergers/cases/decisions/m4719_20070807_20310_en.pdf.

⁵⁷ [Hanson response to the Addendum](#), paragraph 4.7.

RMX

5.95 We summarize below our consideration of market definition in relation to RMX, both in terms of the product market definition and the geographic scope of RMX markets.

Product market definition

5.96 In the Anglo–Lafarge JV report, the CC concluded that:

- (a) all specifications of RMX should be considered to form part of the same relevant product market; and
- (b) the relevant product market included all RMX produced in fixed and site plants, but not concrete produced by means of volumetric trucks.

5.97 The main reasons for (a) were that although there are many different specifications of RMX, corresponding to different mixes of the ingredients, the same RMX plant will typically manufacture the full range of standard RMX mixes on any given day. As a result, with a few exceptions,⁵⁸ switching between these mixes will normally take place on a daily basis. We agreed with this reasoning and concluded that all specifications of RMX should be considered to form part of the same relevant product market.

5.98 The main reasons for (b) were that volumetric trucks appeared to serve a different segment of the market (small-volume projects) and because the product was perceived to be of a lower quality of specification and strength by the majority of parties that were contacted by the CC during the Anglo–Lafarge JV inquiry.

5.99 During our investigation, a number of parties submitted arguments and evidence to the effect that, for the purpose of our market investigation, we should use a wider relevant product market for RMX that included concrete from volumetric, fixed and site plants. A summary of the parties' submissions and the evidence we considered on this issue is in Appendix 5.2.

5.100 The main questions we considered relating to RMX product market definition were:

- (a) whether concrete delivered and produced by volumetric trucks was a substitute for RMX produced at fixed plants; and
- (b) whether concrete produced at site plants was a substitute for RMX produced at fixed plants.

5.101 Overall, the evidence, taken as a whole, suggested to us that volumetric trucks are a substitute for RMX from fixed plants for relatively small projects. There has generally been less use of volumetric trucks on larger projects, though there is some recent evidence that volumetric trucks are also now being used on some larger projects. The internal documents provided to this investigation suggest that volumetric trucks are perceived as a threat by some Majors, and survey evidence shows that many RMX customers have used volumetric trucks in the past (55 per cent). Site plants appear to be suitable only for very large projects and therefore are likely to be a constraint on fixed RMX plants for the largest projects.

⁵⁸ One of these exceptions is that some value-added RMX products may require additional equipment such as a pan mixer or an anhydrite silo.

5.102 In light of this assessment and taking into account the overall role of market definition in this investigation (as set out in paragraph 5.1), we concluded that we should include concrete from volumetric trucks, site plants and fixed plants within our definition of the relevant product market for RMX.⁵⁹ In our competitive assessment of RMX in Section 9, we consider (among other things) the strength of rivalry between volumetric trucks and site plants on one hand and fixed plants on the other.

Geographic scope of competition

5.103 Given that RMX must be used within 1 to 2 hours of being produced, there is broad consensus that the markets are local (catchment areas are typically within about 8 to 10 miles of RMX plants). We noted, however, that volumetric trucks may deliver over greater distances than conventional mixer trucks dispatched from fixed plants since concrete from volumetric trucks can be mixed 'on-site'.

5.104 We therefore concluded that RMX markets were highly localized in nature, with catchment areas in the region of about 8 to 10 miles of RMX plants, albeit with some scope for variation in catchment area according to local factors and the means available for distributing the concrete (ie via volumetric trucks or conventional mixer trucks).

Summary of conclusions on market definition

5.105 We concluded that the appropriate market definitions for the purposes of our investigation were as follows:

(a) In relation to aggregates, we have defined a single relevant product market for all construction aggregates, including crushed rock and sand and gravel aggregates as well as recycled and secondary aggregates. We have not defined separate product markets for different grades of aggregates. We have found that different types of specialist aggregates, such as rail ballast and high-purity limestone, are in separate product markets from each other and from construction aggregates. The geographic scope of aggregates markets is local in nature, with the precise geographic specification varying according to a variety of local factors. We analyse catchment areas for aggregates in our competitive assessment of aggregates in Section 6.

(b) We have defined a single relevant product market for bulk grey cement including different types of cement (ie CEM I, CEM II and CEM III) and imported and GB-produced cement. However, our analysis also took into account the fact that there were constraints on the availability of inputs to the production of CEM II (ie PFA) and CEM III (ie GGBS), and different competitive constraints in relation to these inputs than in relation to the supply of CEM I. This led us to consider also the competitive constraints arising for cement and GGBS separately. We have defined bagged cement as a separate product market. In terms of geographic scope, we have focused primarily on competition at a GB level, taking into

⁵⁹ We note that concrete from volumetric trucks was not included in the relevant market definition in the Anglo-Lafarge JV report (in which the relevant market included RMX produced at fixed sites, mobile plants and site plants, but not concrete from volumetric trucks). However, the local competition assessment for RMX in that report, which focused on areas where the parties to the JV both had RMX sites, took account of possible constraints from local volumetric truck operators (see paragraph 33 of the [Anglo-Lafarge JV report](#)). For reasons analogous to those set out in paragraphs 5.26 and 5.27 above, for the purposes of this market investigation, we propose to use a wider market definition which includes concrete from volumetric trucks. We also note the additional evidence submitted to us in this market investigation in relation to the constraint from volumetric trucks on producers of RMX.

account the constraints from imported cement as part of our competitive assessment in Section 8.

- (c) We defined a single product market for GGBS, including imported and GB-produced GGBS, with a geographic scope of GB.
- (d) In relation to RMX, we defined a single relevant product market including all specifications of RMX as well as RMX supplied from fixed plants and site plants and concrete supplied from volumetric trucks. We found that RMX markets were highly localized in nature, with narrow catchment areas within about 8 to 10 miles of RMX plants, albeit with some scope for variation in catchment area according to local factors and the means of distribution.

6. Competitive assessment: aggregates

Introduction

- 6.1 As set out in paragraph 5.24, we have defined a single relevant product market for all construction aggregates, including crushed rock and sand and gravel aggregates as well as recycled and secondary aggregates. We have not defined separate product markets for different grades of aggregates. We have found that different types of specialist aggregates, such as rail ballast and high-purity limestone, are in separate product markets from each other and from construction aggregates. Further, we have found that the geographic scope of aggregates markets is local in nature, with the precise geographic specification varying according to a variety of local factors.
- 6.2 In this section, we set out our assessment of whether there are features of this market that give rise to one or more AECs through unilateral market power or co-ordination (see paragraph 4.20). As explained in Section 4, much evidence is relevant to consideration of both unilateral market power and coordination and we therefore present our assessment of the scope for unilateral market power and co-ordination together in a single section of this report.
- 6.3 Because geographic markets for construction aggregates are local, the ability of firms to exercise unilateral market power or to coordinate is likely to vary depending on the competitive conditions in different local areas. For instance, some local areas may have higher concentration levels than others, leading to more possible concerns relating to unilateral effects or coordination. Therefore, much of our competitive assessment of the aggregates markets focused on understanding the geographical scope of local aggregates markets, the identity of suppliers and level of concentration in these markets, and on comparing outcomes across local markets to analyse whether there were any widespread features of the GB aggregates markets that give rise to one or more AECs through the exercise of unilateral market power or co-ordination.
- 6.4 Paragraphs 4.25 and 4.28 contain key extracts from the Guidelines on how the CC will conduct its assessment of unilateral market power and coordination. In light of the Guidelines, to conduct our assessment of whether unilateral market power or co-ordination may be giving rise to one or more AECs in GB aggregates markets, in this section we analyse:
- (a) aspects of market structure;
 - (b) market outcomes;
 - (c) conduct in the market; and
 - (d) the impact of recent market developments (see paragraphs 4.35 to 4.37).
- 6.5 We conclude this section by setting out our competitive assessment of the GB aggregates markets in light of this analysis.
- 6.6 We received limited specific submissions regarding competition issues in the markets for specialist aggregates,¹ and we did not become aware of widespread concerns about specialist aggregates during the course of our information gathering and analy-

¹ The comments made by [one aggregates customer] (see paragraph 6.124) in response to our provisional findings related to various types of aggregates, some of which could be considered specialist in respect of their ability to meet particular specifications.

sis for this investigation more broadly. Given this lack of concern regarding competition problems in relation to specialist aggregates, and the constraints on the time and resources available for our investigation overall, we did not prioritize further work on specialist aggregates.² While we have not found evidence in this investigation of features giving rise to an AEC in any such market, we make no finding as to whether or not there are competition problems in particular specialist aggregates markets. We do not consider specialist aggregates further in this report.

Market structure

6.7 In this subsection, we look at several aspects of the structure of aggregates markets in GB:

- (a) We explore shares of supply at GB level.
- (b) We present our analysis of the degree of market concentration at a local level, which relies on a ‘catchment area analysis’ to understand the extent of geographic markets for aggregates.
- (c) We describe the characteristics of aggregates customers and their purchasing behaviour.
- (d) We set out the extent of vertical integration at a national level from aggregates production into downstream operations.
- (e) We explore the extent of barriers to entry and expansion in aggregates markets.
- (f) We describe other relevant aspects of market structure.

GB shares of supply

6.8 Whilst aggregates markets are local (see paragraph 5.30), we examined shares of supply of primary construction aggregates in GB as a whole to understand the position of the key market players overall.

6.9 Table 6.1 shows the pre-2013 Majors’ shares of supply of primary aggregates in GB (ie before the creation of Lafarge Tarmac and the entry of HCM into the relevant markets), alongside the total share of supply held by the non-Majors. Figures for MQP are shown separately to take account of the fact that it was a 50:50 JV between Hanson and Tarmac (see paragraph 1.17). The table shows that the pre-2013 Majors collectively supplied 69 per cent of aggregates in GB, based on 2011 volumes.

TABLE 6.1 Pre-2013 Majors’ and non-Majors’ shares of supply of aggregates in GB for year 2011

	Aggregate Industries	Cemex	Hanson (excl 50% in MQP)	Lafarge	Tarmac (excl 50% in MQP)	MQP	Total pre-2013 Majors (incl MQP)	Total non-Majors
Total GB	[30]	[30]	[30]	[30]	[30]	[30]	69	31

Source: CC analysis based on data from the Majors, some non-Majors, and BDS.

6.10 Table 6.2 shows the 2013 Majors’ shares of supply of aggregates in GB (ie following the creation of Lafarge Tarmac, the entry of HCM into the relevant markets and the

² This approach is supported by paragraph 36 of the Guidelines—see paragraph 4.5.

acquisition by Hanson of the 50 per cent of MQP that it did not already own—see paragraph 1.17), alongside the total share of supply held by the non-Majors. The table shows that (based on data from 2011) the 2013 Majors collectively supply 69 per cent of aggregates in GB. In addition, Lafarge Tarmac is now, by some margin, the largest producer of aggregates in GB. HCM is a relatively small player in GB aggregates markets taken as a whole.

TABLE 6.2 2013 Majors' and non-Majors' shares of supply of aggregates in GB for year 2011

	<i>per cent</i>						
	<i>Aggregate Industries</i>	<i>Cemex</i>	<i>Hanson</i>	<i>Lafarge Tarmac</i>	<i>HCM</i>	<i>Total Majors</i>	<i>Total non-Majors</i>
Total GB	[X]	[X]	[X]	[X]	[X]	69	31

Source: CC analysis based on data from the Majors, some non-Majors, and BDS.

Note: Estimates in this table are based on a combination of transaction data from the Majors and some non-Majors and BDS estimates of sales for non-Majors for which we did not have transaction data. This explains the difference between our estimates of market shares and estimates by the BDS as reported in BDS reports.

6.11 We obtained more recent data on market shares for the supply of aggregates in GB in 2012, which is set out in Table 6.3. There are some differences in the way shares were estimated in Table 6.3 compared with Table 6.2, as a result of which the market shares are not directly comparable between these tables.

TABLE 6.3 2013 Majors and non-Majors shares of supply of aggregates in GB for year 2012

	<i>per cent</i>						
<i>AI</i>	<i>Cemex</i>	<i>Hanson</i>	<i>Lafarge Tarmac</i>	<i>HCM</i>	<i>Total Majors</i>	<i>Total non-Majors</i>	
[X]	[X]	[X]	[X]	[X]	71	29	

Source: BDS estimates for 2012.

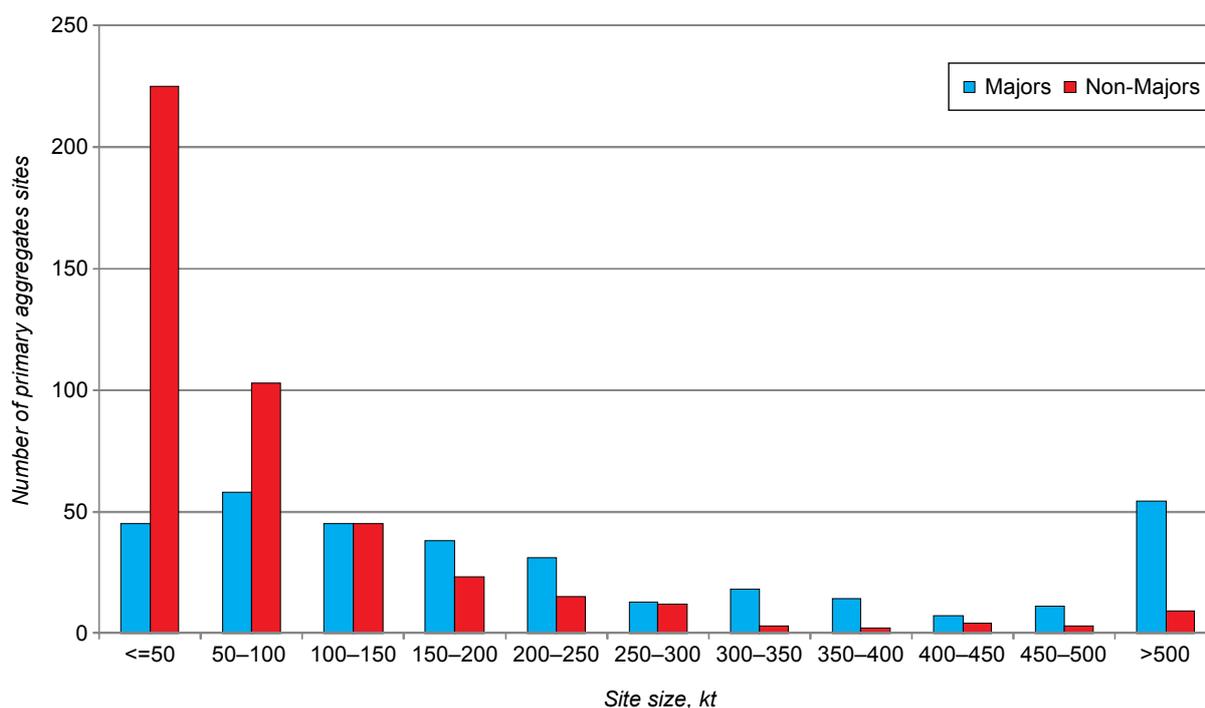
Note: Estimates in this table are based on BDS estimates of Majors and non-Majors output, rather than transaction data and BDS estimates for Table 6.2, and are therefore less precise. These estimates assign ownership of quarries at the time of writing the report (September 2013), and therefore Lafarge Tarmac and Hope are shown, although this structure started in January 2013. Similarly, the Breedon Aggregates assets recently acquired from Aggregate Industries in Scotland are assumed to be under Breedon Aggregates ownership in these estimates.

6.12 There were around 234 non-Major aggregates suppliers in GB in 2011, operating around 444 primary aggregates sites (quarries and wharves).³ Most independent producers are small, with many operating only one site (two sites on average); in comparison the five Majors operated 334 sites collectively. As described in Sections 2 and 3, there are a number of mid-tier aggregates suppliers, which each operate a number of sites in regional markets (for example, Leiths in Scotland, Marshalls in the North, Breedon Aggregates in Scotland and the Midlands, Brett in the Eastern and the South-East regions). Non-Majors' sites tend to be smaller than Majors' sites on average; Figure 6.1 shows that most of the aggregates sites supplying less than 100 kt in 2011 were operated by non-Majors, whereas the larger sites tend to be operated by the Majors.

³ Source: BDS.

FIGURE 6.1

Sizes of primary aggregates sites in GB: Majors versus non-Majors, 2011



Source: CC analysis of BDS data.

Catchment area analysis and market concentration at local level for aggregates

Catchment areas

- 6.13 Having found that aggregates markets were local (see paragraph 5.30), we undertook a catchment area analysis to help us understand the extent of such geographic markets (ie what 'local' meant in practice).⁴ We describe our methodology in Appendix 6.1. The results of this analysis fed into our assessment of concentration in local aggregates markets (see paragraphs 6.18 to 6.20), our price-concentration analysis (PCA) (see paragraphs 6.90 to 6.92) and our entry and exit analysis (E&EA) (see paragraphs 6.93 to 6.97).
- 6.14 Parties to the investigation told us that aggregates markets were local, and that they extended to about 30 miles or more around quarries.⁵ Our analysis focused on sales delivered to external customers (ie customers other than parties' own downstream businesses or depots), and found that 80 per cent of sales volumes of primary aggregates were transported up to around 19 miles (straight-line) in urban areas and up to around 28 miles in non-urban areas on average. These figures are 80 per cent catchment area distances averaged across the four Majors for which data was available, focusing on the final leg of delivery. We used these averages (rounded to 20 miles and 28 miles) in our assessment of the concentration of local markets and in our PCA and E&EA.

⁴ For this analysis, our focus is on sales of primary construction aggregates by the pre-2013 Majors. All references to the Majors in the context of our catchment area analysis are references to the pre-2013 Majors.

⁵ See paragraph 5.28.

- 6.15 We found that there was considerable variation in catchment areas across suppliers, products, and aggregates sites, as a great number of factors influenced the distances over which aggregates were delivered to customers. For example, catchment areas for higher-specification products tended to be significantly larger than those of lower-specification aggregates, such as recycled aggregates and sub-bases and fills. Catchment areas of sites located in urban areas tend to be smaller than catchment areas of non-urban sites. We found that catchment areas for internal sales were larger than for external sales. Our analysis suggested that the 30-mile figure mentioned by parties in relation to the geographical extent of aggregates markets was more representative of 90 per cent catchment areas.
- 6.16 In comments on the catchment area analysis and PCA and E&EA analysis, one of the main concerns expressed by some parties related to the distinction we made between urban site and non-urban site catchment areas. We carried out further sensitivity checks on our catchment area analysis, and found that the average 80 per cent catchment area distance for primary construction aggregates was 24 miles across all aggregates sites we analysed, irrespective of whether we classified them as urban or non-urban.
- 6.17 Further details of the results of our catchment area analysis, and the sensitivity checks we undertook, are in Appendix 6.1.

Concentration in local aggregates markets

- 6.18 We looked at the alternative sources of aggregates available to customers within the 80 per cent catchment area around their 'job sites' (ie the locations where aggregates were used). We looked at concentration in terms of the number of plants, the number of different suppliers and market share (by volume) held by the largest supplier,⁶ the largest four suppliers⁷ and the five pre-2013 Majors. We used data on the location of aggregates plants and primary construction aggregates sales from 2011, and on customer job sites for delivered sales from the three pre-2013 Majors for which this data was available. The details of our assessment of concentration in local aggregates markets are in Appendix 6.7.
- 6.19 We found that [nearly all] job sites where aggregates were purchased and delivered in 2011 had a choice of more than five aggregates plants within the 80 per cent catchment area distance around those sites. We also found that 90 per cent of job sites had a choice of more than five different suppliers within that distance. Therefore, it appears that most aggregates customers have some degree of choice of supplier.
- 6.20 When we considered market shares around job sites rather than simply the number of plants or competitors, we found evidence of high concentration in some local aggregates markets:
- (a) in the catchment areas around 11 per cent of job sites, the largest company had a market share (by 2011 sales volume) of more than 50 per cent;
 - (b) in the catchment areas around 22 per cent of job sites, the four largest companies collectively had a market share of more than 90 per cent; and

⁶ This is known as the C1 concentration ratio.

⁷ This is known as the C4 concentration ratio.

- (c) in the catchment areas around approximately 11 per cent of job sites, the pre-2013 Majors collectively had a market share of 90 per cent or more.

Characteristics of the product, customers and purchasing behaviour

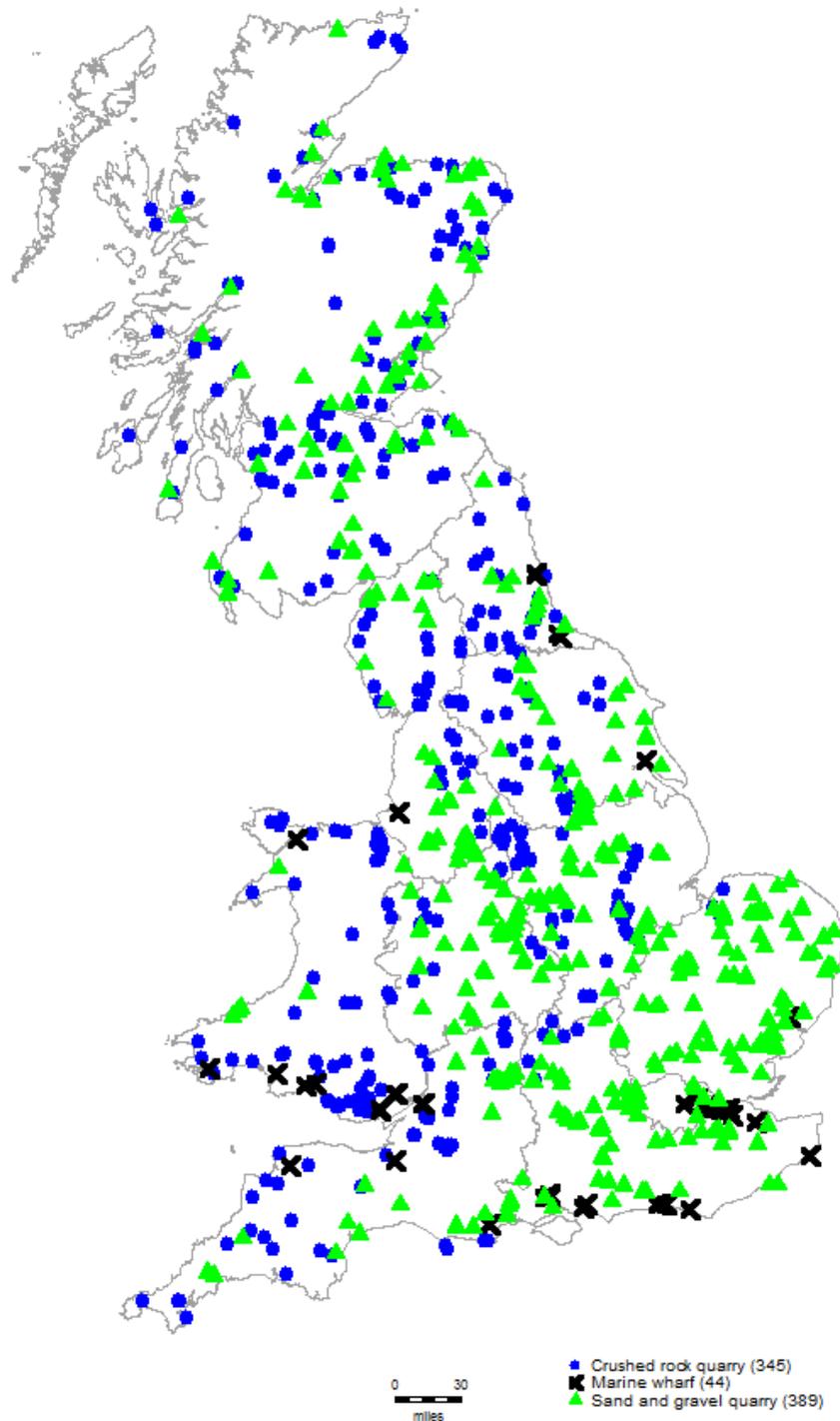
- 6.21 The characteristics of the product, of the customers and the purchasing behaviour of customers may have an impact on the amount of transparency in the market and on the incentives of aggregate producers to compete, and are therefore relevant to our analysis of competition in the aggregates markets. For instance, if there is a high degree of product differentiation, this is likely to reduce the transparency in the market and may be a factor that makes coordination less likely. Also, the way in which customers purchase aggregates (eg whether they go through formal tenders, or long-term contracts, or tend to purchase aggregates ad hoc) is also likely to impact the way in which competition between aggregate producers takes place.

Characteristics of the product

- 6.22 There are different sub-types of aggregates products in terms of their origin (eg primary, secondary, recycled), geological composition or properties (eg sand, gravel, different types of rock), and grade (eg fine, coarse, graded/mixed) (see paragraphs 2.5 to 2.10). This means that there is a degree of product differentiation, although this is limited by the extent of demand- and supply-side substitutability (see paragraphs 5.5 to 5.27 on product market definition for aggregates). Moreover, aggregates within each sub-type are relatively homogeneous, and might be subject to regulations, such as specifications for highway works (eg sub-bases and fills, crushed rock for asphalt production) and/or BS/EN standards (eg aggregates for RMX and asphalt production). Thus, in addition to a degree of substitutability of different aggregates sub-types, within each sub-type the aggregates produced by different suppliers are largely homogeneous from a product perspective.
- 6.23 There is geographic differentiation of aggregates, since points of supply of aggregates (ie quarries, depots, marine wharves) are located at various addresses and thus at various distances to customers. Availability of different types of aggregates (eg sand and gravel versus crushed rock) also varies across GB. As an illustration, Figure 6.2 shows locations of primary aggregates quarries in GB in 2011. Since transport costs relative to the value of aggregates can be important, this means that, for a given aggregate product, distance between supplier sites and customer sites is a factor differentiating suppliers (eg customers may prefer suppliers located closer to their sites). Our competitive assessment for aggregates therefore takes account of this product (ie between aggregate sub-types) and geographic differentiation.

FIGURE 6.2

Locations of primary aggregates quarries and wharves in GB, 2011



Source: CC analysis of BDS data.

Characteristics of customers and purchasing behaviour

- 6.24 Many types of customers make aggregate purchases, with the purpose of using aggregates as an input into RMX, concrete products and asphalt and/or using aggregates for end-use (such as sub-base/fills), or for onward distribution to end-consumers. These customers broadly include the following:

- (a) building contractors and subcontractors;
- (b) public sector direct customers, such as local authority districts and the Highways Agency, purchasing aggregates for highway maintenance;
- (c) builders' merchants, purchasing aggregates (including bagged aggregates) for onwards sale to end-consumers (examples include Travis Perkins, Jewson);
- (d) customers with fixed points of consumption—these are customers who operate RMX plants, concrete products factory or asphalt plants (this includes own downstream businesses and those of other operators); and
- (e) casual customers or 'cash sale customers', who make one-off purchases directly from the quarry sites.

6.25 The number of the Majors' aggregates customers in any given year measures in thousands. However, as Table 6.4 below shows for three of the Majors, a relatively small number of customers make the majority of aggregates purchases. Depending on the major, the largest ten customers accounted for between 27 and 40 per cent of primary construction aggregates sales to external customers and own JVs in 2011. The largest 100 customers accounted for between 61 and 76 per cent of sales. We note, however, that the customer base may be more or less fragmented on local or regional level, and that this may vary from one local area to another. Majors' largest customers include other Majors, RMX, asphalt, and concrete products companies (such as Euromix, Breedon Aggregates, Brett, Marshalls), large construction companies (such as Balfour Beatty, BAM), and large builders' merchants (such as Travis Perkins).

TABLE 6.4 Majors' sales of primary construction aggregates to largest customers, 2011

Customer type/size	Hanson	Lafarge	Tarmac
<i>Volumes (kt)</i>			
Sales to top 10 customers	[X]	[X]	[X]
Sales to top 50 customers	[X]	[X]	[X]
Sales to top 100 customers	[X]	[X]	[X]
Total external sales	[X]	[X]	[X]
<i>Proportion of total sales (%)</i>			
Sales to top 10 customers	[X]	[X]	[X]
Sales to top 50 customers	[X]	[X]	[X]
Sales to top 100 customers	[X]	[X]	[X]

Source: CC analysis of Majors' transaction data.

Note: Includes delivered and collected sales of primary construction aggregates to external customers and own JVs.

6.26 The way purchases of aggregates are made and prices are negotiated varies across types of customers and/or projects. Broadly, purchases of aggregates can be from four potential channels: major projects, non-major projects, fixed points of consumption, and casual one-off purchases. With the exception of casual purchases or cash sales, for which price lists are used for setting the prices and which represent a small fraction of Majors' sales of aggregates, prices are bilaterally negotiated and/or set through informal or formal tenders or agreements. Internal guide prices and discounts (which are typically set on a regional basis) or prevailing prices of existing supply arrangements are usual starting points for quotes and price negotiations with customers. We were told that long-term contracts or supply agreements were relatively rare, and that prices could be renegotiated at least annually:

- (a) [X] told us that major projects, which were tendered either through construction contractors or directly to material producers, were bid through a competitive

formal tender process. For non-major projects, formal tenders were less common, and contracts for the supply of aggregates were negotiated on a bilateral basis, tended to be short in duration (a few months) and tended to be project-based. It told us that it entered into non-exclusive supply agreements with fixed points of consumption customers (such as RMX or asphalt producers); it said that these were normally of 12 months' duration. It noted that these customers were market experts who would switch suppliers if there was a breakdown in the relationship over quality, service or pricing.

- (b) [REDACTED] told us that it secured the majority of its aggregates orders through formal tenders and through informal tenders, where customers called a number of suppliers for quotes. [REDACTED] told us that its initial quote was based on regional pricing tools, which took into account the local market conditions, and that the final price paid by customers normally included a negotiated discount.
- (c) Hanson told us that the majority of its aggregates sales were to contract customers, account customers and spot customers, and that supplies won through a formal tender process were only a small proportion of its sales. Hanson told us that the majority of its sales took place after more informal tender processes where customers regularly sought multiple quotations from various suppliers. Contract customers, which could be large or fixed-plant customers, had a term contract with Hanson lasting more than 12 months, with a pricing formula negotiated and agreed in order to limit the scope for price renegotiations during the term of the contract. Account customers, which may also include fixed-plant customers, had agreed formal or informal pricing contracts with Hanson, lasting a year or less, with prices being renegotiated on an annual or more frequent basis. Hanson explained that its spot customers tended to agree prices on a project-by-project basis, and that prices were generally negotiated using internal pricing grid mechanisms or informal tenders.
- (d) Lafarge told us that most of its customers were either fixed outlet customers or were acquired on a job-by-job basis through an informal tender/quoting process; purchases of aggregates acquired through a formal tender process were rare. Lafarge told us that prices for projects were individually negotiated with customers on job-by-job basis, and that Lafarge internal price guides provided a starting point for initial quotes. Lafarge told us that prices for fixed outlet customers were negotiated annually, and that pre-existing prices formed the starting point for price negotiations. For new fixed outlet customers, the price quoted would be determined by the internal price guides and prices charged to similar customers in the same area. Lafarge submitted that it had a number of long-term agreements (lasting 5 to 20 years) for the supply of aggregates,⁸ and that prices were set at the commencement of the contract with agreed annual indexation; long-term supply arrangements to Lafarge's downstream JVs were subject to annual price negotiations.
- (e) Tarmac told us that formal tenders were received in relation to work in the public sector or in relation to large contracts, and that prices were set through sealed bids or detailed negotiations. It said that written and verbal customer enquiries were the basis for the majority of price quotations it issued. It told us that it calculated initial prices taking into account factors such as job size and transport costs, and these prices were then subject to negotiations on discounts. Prices were set on the commencement of a contract, and longer-term or high-volume contracts had an agreed price escalation mechanism, such as indexation.

⁸ Lafarge noted that these long-term agreements largely related to non-construction (ie specialist) aggregates.

Vertical integration from aggregates into downstream operations

- 6.27 Major GB aggregates suppliers are vertically integrated in that a significant proportion of their aggregates sales are to their own downstream RMX, asphalt, concrete products and other businesses. As set out in Appendix 2.3, Table 3, the proportion of sales of aggregates by Majors to their own downstream businesses was between 33 and 49 per cent in 2011 (depending on the Major). Our estimates also show that Majors' RMX, asphalt and concrete product downstream businesses sourced between 80 and 93 per cent of their aggregate requirements internally in 2011, although this varied between suppliers and the activity of downstream businesses (see Appendix 2.3, Table 4).
- 6.28 Many of the non-Major aggregates suppliers are also vertically integrated into RMX, asphalt or concrete products:
- (a) BDS estimated that around 33 per cent of independent RMX companies (ie excluding the Majors and some mid-tiers, such as Breedon Aggregates and Brett) were sourcing aggregates internally in 2010;⁹ and
 - (b) of the 20 top independent suppliers of aggregates (according to BDS 2011 data), at least 13 had RMX operations, 7 had asphalt operations, and 5 had concrete products operations.
- 6.29 For both Major and non-Major suppliers of aggregates, the extent of vertical integration into downstream products may vary across local markets. However, we have not undertaken further analysis of the extent of vertical integration of aggregates into downstream operations on a local or regional level because this was unlikely to impact our competitive assessment for the supply of aggregates in GB.

Barriers to entry and expansion

- 6.30 In the following paragraphs, we consider potential barriers to entry and expansion in relation to the supply of (a) primary land-won aggregates; (b) marine aggregates; and (c) recycled and secondary aggregates. Further details of our analysis of barriers to entry and expansion are presented in Appendix 6.2.

Primary land-won aggregates

- *Possible modes of entry and expansion*

- 6.31 We identified the following possible modes of entry and expansion for the production of primary aggregates:
- (a) developing or expanding a land-based aggregates site; and
 - (b) developing or expanding an import operation.
- 6.32 Imports of aggregates from outside GB are relatively small—as an indication, imports of aggregates into the UK (ie GB and Northern Ireland—we do not have figures for GB only) amounted to around 2.3 Mt in 2010, which is around 1.4 per cent relative to the UK production.¹⁰ The low proportion of imported aggregates is accounted for by the nature of aggregates which are in general low-value, heavy commodities, and as

⁹ BDS (2011), 'Aggregates supplies to ready mixed concrete plants', Table 1.

¹⁰ Source: *United Kingdom Minerals Yearbook 2011*.

such transport costs make imported aggregates uncompetitive compared with domestically-quarried aggregates sourced close to the end-market. We received evidence indicating that importing aggregates is viable only for higher-grade aggregates for specialist applications or in certain geographic areas where there is no transport cost disadvantage. Therefore we do not consider barriers in relation to imports.

6.33 It was put to us that hauliers could purchase and distribute aggregates. As a merchant haulage operation concerns the transport of aggregates that have been quarried and does not increase the volume of aggregates available in the market, we do not consider this as an example of entry.¹¹

- *History of entry and exit*

6.34 According to the MPA, there were 335 primary aggregates producers in GB in 2008.

6.35 Table 6.5 shows the total number of land-based aggregates sites that were opened and closed between 2008 and 2011. The table also shows the number of sites that were opened and closed by the Majors, which demonstrates that non-Majors accounted for the majority of sites opened and closed during this period.

TABLE 6.5 **Aggregates sites opened and closed in the UK, 2008 to 2011**

	2008	2009	2010	2011	Total
Total sites opened	39	33	38	31	141
Sites opened by the Majors	8	2	6	4	20
Total sites closed	55	64	55	57	231
Total sites closed by the Majors	22	36	35	24	118

Source: CC analysis.*

*CC analysis based, in the case of the Majors, on plant lists provided to the CC by the Majors, and in the case of the independents, on reports by BDS. We note that submissions to BDS are voluntary, therefore the data may not capture all sites opened and closed by independents. We also note the following: (a) sites that are inactive/mothballed in one year and active the next year will show as a site opened in the second year; (b) when quarrying is started on a site that is not part of the original excavation, it may be captured in the data as a new site; and (c) this may include sites set up for specific projects or with a purpose of mainly supplying internally to a company's own downstream operations. Thus, these numbers may overestimate 'genuine' entry and exit events.

6.36 Of the 141 aggregates sites opened between 2008 and 2011, 42 per cent were crushed rock sites, 55 per cent were sand and gravel sites and 3 per cent were combined crushed rock and sand and gravel sites.

6.37 The MPA noted that annual surveys of its members between 2000 and 2008 found that in England, Scotland and Wales there were 314 planning applications to develop or extend sites for the extraction of crushed rock or sand and gravel. 17 per cent of these planning applications were for new sites and 83 per cent were for extensions of existing sites. 75 per cent of the planning applications related to sand and gravel sites and 25 per cent to crushed rock sites. The MPA commented that it was unsurprising that most planning applications were for the extension of existing sites given that most quarry operations were long term in nature, operators generally aimed to maximize the recovery of aggregates from a site, and planning authorities typically released areas of a site for extraction in incremental stages.

¹¹ Cemex noted that merchant hauliers could transport aggregates over greater distances by arbitraging prices in different locations and their activity would often increase the total volume of aggregates in a given area.

- *Possible barriers to entry and expansion*

6.38 In relation to land-based primary aggregates, we consider the following possible barriers:

(a) availability of greenfield sites;

(b) planning permission process;

(c) capital cost;

(d) economies of scale; and

(e) barriers to expansion.

6.39 Our assessment has looked at factors likely to apply generally in the UK. Some of the Majors indicated that barriers to entry in particular regions may depend on the geographic distribution of aggregates, transport links, and differences in the ease of obtaining planning permission (see Appendix 6.2).

6.40 We acknowledge that it is possible that the size and impact of barriers to entry and expansion could vary between regions. We have not investigated any such regional variation because, for the reasons set out in paragraph 6.127, we have not investigated individual local aggregates markets in detail.

- *Availability of greenfield sites*

6.41 The availability of primary aggregates is determined by geology as particular types of primary aggregate can be extracted only where they occur naturally. As shown in Appendix 6.2, in England hard rock is predominantly found to the north of a line that runs from the South-West in Devon and Somerset to the north of Norfolk and south of Lincolnshire, whereas sand and gravel is more widely distributed.

6.42 The Majors told us that while there may be limits on the availability of aggregates of a particular type in any area, there was considerable substitutability between rock and sand and gravel in end-uses, and that quarries tended to produce multiple grades (see paragraph 5.6). The only exceptions were for specialist aggregates, although these could generally travel economically for longer distances.

6.43 We conclude that the availability of aggregate resources is not a barrier to entry. Although it is generally not economic to transport aggregates over long distances, the evidence suggests that there is substitutability between crushed rock and sand and gravel in a considerable proportion of general construction end-uses (see paragraphs 5.8 to 5.11) so that access to crushed rock or sand and gravel specifically is usually not important for such applications. Availability can be a barrier to entry in relation to aggregates for higher-specification RMX¹² and asphalt production, and specialist aggregates which occur less widely (see paragraph 6.6).

- *Planning permission process*

6.44 The planning permission process is set out in paragraphs 2.14 to 2.30.

¹² Tarmac told us that this statement was not relevant for RMX as all the inputs for RMX were widely available.

- 6.45 The planning permission process and the timescale required to obtain planning permission for primary aggregates sites were mentioned by all the Majors as potential barriers to developing new sites for aggregate production. They told us that the total length of time to bring a new site into production (given the stages of getting the site incorporated into the minerals development plan, undertaking environmental impact assessments, preparing the planning application, consulting, and applying for permits and licences) would be likely to take between two and a half and ten years (see Appendix 6.2). The MPA similarly said that a new quarry or extension could take between 5 and 15 years to become operational. It told us that most planning applications for new primary aggregates sites were successful, including applications by small and medium-sized enterprises.
- 6.46 We were told that some LMPAs had interpreted the recommendations on the landbank of permitted reserves (see paragraph 2.21) too rigidly, with the effect that there was only a narrow window for new reserves being permitted and that planning applications might be refused if the landbank in an area extended beyond the minimum durations specified in the Government's statement. However, DCLG told us that the National Planning Policy Framework (NPPF) contained strong policies on how local planning authorities should approach decision-taking in a positive way to foster the delivery of sustainable development and that to complement these policies DCLG was pursuing a programme of reforms to simplify and speed up the planning system.¹³ Aggregate Industries and Cemex commented that these reforms could speed up the process and reduce barriers to entry.
- 6.47 We conclude, notwithstanding that historically most planning applications were successful, that the length of the planning process limits the competition faced over the medium term by existing aggregates producers from entry by operators developing new sites. The length of the planning process for new sites also creates an incumbency advantage for existing aggregate producers as the planning process for site extensions is generally much simpler (see paragraph 6.56).
- 6.48 We note that landbanks have an important role in securing future supplies of aggregates. We have assessed whether the way planning policy relating to landbanks is implemented might be distorting competition in paragraphs 11.6 to 11.14, where we have found that it does not appear to do so. We also note the developments in the NPPF mentioned in paragraph 6.46. Therefore, in relation to barriers to entry, whilst in our view the planning regime as a whole presents a barrier to entry, the role of landbanks within the regime does not appear materially to add to this in a way that is out of proportion to the policy outcome intended.
- *Capital cost*
- 6.49 Four of the Majors told us that the capital cost of developing a primary aggregates site was a potential barrier to entry, though three of the Majors noted that the up-front costs could be minimized by leasing land and equipment.¹⁴ The costs for establishing

¹³ DCLG also told us that as part of its wider planning reforms, it was undertaking a number of changes to the planning application process. In July 2012 DCLG consulted on a package of proposals to streamline the process. Having considered the public response, it was taking forward all the proposals as consulted on and in January 2013 launched a further consultation on additional measures to streamline planning applications. DCLG commented that these proposals complemented measures in the Growth and Infrastructure Bill, which set out a series of reforms to tackle unnecessary red tape and bureaucracy that could delay and discourage business investment, new infrastructure and job creation. The Bill included a measure that would allow applicants to opt for certain planning applications to be decided by the Planning Inspectorate if the local authority had a clear track record of consistently making excessively slow or ill-judged decisions. The purpose of these reforms was not to centralize planning, rather to ensure that all local authorities met an acceptable minimum standard that one would reasonably expect, thereby removing uncertainty for both applicants and local residents. The Growth and Infrastructure Act 2013 received Royal Assent on 25 April 2013.

¹⁴ Tarmac also noted that the supply of labour and machinery could be subcontracted.

a greenfield site include: the acquisition of land and mineral rights; land preparation, access and restoration (at the end of the site's life); and equipment costs. Estimates for the cost of equipment varied substantially depending on the size of the site and whether it was a crushed rock or sand and gravel site (see Appendix 6.2), but ranged from £0.25 million for a small sand and gravel site to potentially over £40 million for a large crushed rock site.

6.50 The capital cost of developing production needs to be assessed in the light of the anticipated revenues and margins of that facility and the ability to access finance. We did not receive a persuasive body of evidence from parties indicating that they perceived capital costs as a significant barrier to entry. We conclude that while there can be a considerable cost in developing an aggregates site, the cost need not be prohibitive, particularly for small-scale sites, if the land and mineral rights are leased and the equipment is leased or rented.

- *Economies of scale*

6.51 The Majors told us that some economies of scale existed in relation to primary aggregates, as larger sites could be operated more efficiently than smaller sites in terms of unit costs because for larger sites, fixed costs were spread over a greater volume of sales. However, Aggregate Industries told us that the fact that quarries of all sizes competed in the same local areas indicated that economies of scale were not an important factor. Other Majors argued that economies of scale would not be achieved if there was insufficient local demand for the plant to be operated at capacity, and so the optimum size of plant depended on the nature of the market for aggregates in that area.

6.52 The Majors also noted that there could be economies of scale arising from overall size across multiple sites, through sharing central support costs, improving the organization of logistics and giving access to expertise, although Tarmac said that these factors were not important due to the local nature of markets.

6.53 We considered the evidence on economies of scale as part of our analysis of plant-level margins (see paragraphs 6.81 to 6.89). We found significant variations in plant-level margins and no discernible relationship between production volumes and plant-level margins, and concluded that there was unlikely to be any significant plant-level economies of scale but that some large aggregates plants benefited from rail links which could reduce transport costs compared with road haulage.

- *Barriers to expansion*

6.54 The Majors told us that there were very limited barriers to increasing production at an existing operational primary aggregates site within its existing plant capacity. Possible factors might include any planning permission for changing the hours of operation, and the availability of transport capacity. We were also told that there currently existed substantial excess capacity within the aggregates industry.

6.55 The Majors also told us that there were limited barriers to increasing the capacity of an existing plant. Gaining planning consent could constitute a barrier, but we were told that the process was much less onerous and the timescale much shorter for a capacity extension at an existing site than for a new greenfield development. The MPA told us that most planning applications for the expansion of aggregates sites were successful, and that the large companies and SMEs had similar success rates in obtaining planning permission.

- 6.56 We conclude that expanding an existing site, either by increasing its output or by extending the site, is likely to be easier, faster and cheaper than developing a new site because the planning process is likely to be simpler, and much of the required equipment will already be in place. While barriers to expansion are lower, this implies that existing producers have an incumbency advantage over new entrants.

Marine aggregates

- 6.57 Marine aggregates accounted for 4.8 per cent of GB aggregates supply in 2010.¹⁵ According to the British Marine Aggregates Producers Association (BMAPA) (based on information on The Crown Estate website¹⁶), there are 14 companies active in marine dredging which together operate 27 vessels in 70 production licence areas (Hanson, Tarmac and Cemex are the most active operators, with licences to dredge in 20, 18 and 10 areas respectively) and there are 62 licence applications currently outstanding, of which 21 have been submitted by Cemex, 14 by Hanson and 13 by Tarmac.
- 6.58 The principal modes of entry or expansion are developing or expanding a marine aggregates dredging operation. Marine sand and gravel extraction can only take place where suitable resources exist. Seabed sand and gravels are widespread around GB, but many deposits are in deep water or are too thin to be commercially dredged or are dominated by unsuitable grain sizes (eg fine sand) and therefore not suitable for construction aggregate use.¹⁷ The industry believes that the commercially viable resources of marine sand and gravel are sufficient to last for at least 50 years at the current rates of extraction.¹⁸ The volume and location of the marine aggregates that can be extracted by dredging are dependent on the licensing regime. The area of the UK seabed that was licensed for dredging in 2011 was 1,274 km², which represents 0.15 per cent of the total UK seabed; the area actually dredged was 114 km², which was 8.9 per cent of the area licensed.¹⁹
- 6.59 As set out in Appendix 2.1, the commercial rights to marine sand and gravel resources in the waters around the UK are held by The Crown Estate, which issues licences for prospecting and production. A licence for marine mineral extraction is also required from the Marine Management Organisation.²⁰ Operators told us that historically the process to obtain a production licence could take up to ten years, but the process had been simplified and now should not take more than three years.
- 6.60 We were told that there are over 60 wharves in 35 ports around England and Wales where marine aggregates are currently unloaded, and so access to wharf facilities did not present a barrier to entry.
- 6.61 The cost of entry into marine aggregates production varies substantially depending on the scale of production. We received estimates of set-up costs of between £[redacted] million and £[redacted] million to establish the operation and between £[redacted] million and £[redacted] million for the cost of a dredger if a new one were to be purchased rather than leased. Entry at the upper end of these production scales would represent a significant proportion of the UK marine aggregates industry, which landed a total of 11.5 million tonnes of aggregates in the UK in 2011.

¹⁵ www.bmapa.org/about/key_facts.php.

¹⁶ www.thecrownestate.co.uk/energy-infrastructure/aggregates/.

¹⁷ The practical limit in dredging is 50 metres.

¹⁸ British Geological Survey: *The strategic importance of the marine aggregates industry in the UK*.

¹⁹ *The area involved—14th annual report*, published by the BMAPA and the Crown Estate, August 2012.

²⁰ www.bmapa.org/regulation_and_management/licensing_and_regulation.php.

- 6.62 Our conclusion is that licensing and capital outlay considerations in relation to the production of marine aggregates create barriers to entry in the aggregates market via this route similar in scale to those created by the planning process and capital requirements to enter via the production of land-based primary aggregates.

Secondary and recycled aggregates

- 6.63 The Majors told us that there were low barriers to entry into secondary aggregates production, when a steady supply of secondary material was available. We were told that little capital investment was required; crushing, grading and sorting equipment could be leased, and we were told that planning represented a much lower hurdle than in the case of primary aggregates.
- 6.64 We were also told that there were low barriers to entry into recycled aggregates production, although the availability of materials (primarily from demolition and construction waste) to recycle could limit the production of recycled aggregates. The MPA said that up to 5 Mt of hard material could potentially still be extracted from the waste stream²¹ As discussed in paragraphs 5.12 to 5.22, recycled materials can be substituted in full for all primary low-grade aggregates, although they may not be suitable for higher-specification products. For example, BAA noted that recycled aggregates were not suitable for use in the production of higher-strength concrete when quality assurance was an important consideration as the concrete had to be made with a consistent grade of raw material from a known origin.
- 6.65 Capital costs are significantly lower than for primary aggregates as when the operation is co-located with a demolition site there is no additional land cost, and the planning process is also simpler (see Appendix 6.2).
- 6.66 The MPA told us that the share of secondary and recycled aggregates in the GB aggregates market had increased from 10 per cent in 1990 to 28 per cent in 2011, and we note that the NPPF provides that LMPAs should take account of secondary and recycled materials before considering the extraction of primary materials.²²
- 6.67 Therefore, we conclude that there are lower barriers to entry for recycled aggregates than for primary aggregates. The incentives to recycle aggregates will respond to the pricing of aggregates, although the limit on the availability of material to recycle will constrain entry via this route and, for the reasons set out in paragraphs 5.12 to 5.22, recycled aggregates are not fully substitutable for primary aggregates across the full range of end-uses.
- 6.68 Secondary aggregates are, by definition, the by-products of other industrial processes. Given the landfill tax and the revenue able to be realized through the sale of secondary aggregates, there are likely to be strong incentives on producers of material that can be sold as secondary aggregates to sell it as such, rather than simply to dispose of it. However, the amount of secondary aggregates produced is unlikely to vary in response to variations in the competitive conditions for primary aggregates: rather, the amount produced is likely to depend mainly on the production of the primary products from which they are derived (or if technological advances make secondary aggregates production or processing more commercially viable). Consequently we conclude that expansion in the supply of secondary aggregates is unlikely to form a competitive constraint.

²¹ MPA hearing summary, paragraph 12.

²² NPPF, paragraph 143.

Conclusions on barriers to entry and expansion

- 6.69 For the reasons detailed in paragraphs 6.41 to 6.56, we conclude in relation to primary aggregates that barriers to entry and expansion can arise due to the time required to identify and acquire a suitable site and to obtain planning permission. This limits the competition faced by existing aggregates producers over the medium term from operators entering the market by developing new sites. In addition, it is likely to be easier, faster and cheaper to expand an existing site, either by increasing its output or by extending the site, than to develop a new site because the planning process is simpler and much of the required equipment will already be in place. This gives existing producers an incumbency advantage over new entrants.
- 6.70 While there can be a considerable cost in developing an aggregates site, the cost need not be prohibitive, particularly for small-scale sites, if the land and mineral rights are leased.
- 6.71 For marine aggregates, licensing and capital outlay considerations create barriers to entry similar in scale to those created by the planning process and capital requirements to enter the land-based primary aggregates market.
- 6.72 Barriers to entry into the production of secondary and recycled aggregates are considerably lower than for primary aggregates, provided there is a suitable supply of secondary material or material for recycled aggregates in a given area.

Other aspects of market structure (eg structural links)

- 6.73 We note that there are considerable structural links between the Majors (whether considering the pre-2013 Majors or the 2013 Majors). Appendix 3.1 lists the JVs with which each pre-2013 Major was involved. With the exception of MQP, which is now fully owned by Hanson (see paragraph 1.17), these JVs continue at present. The majority of these JVs related to aggregates operations. The pre-2013 Majors were also members of a common trade association (the MPA), Lafarge Tarmac is now a member of the MPA and HCM joined the MPA on 1 July 2013 on a six-month trial basis.
- 6.74 Our concern is not that these JVs or trade associations in themselves are aimed at facilitating market transparency or anti-competitive activity, and we have seen no evidence that this is the case. Our concern is that JVs necessitate meetings between the JV partners, and trade associations necessitate industry gatherings more generally. In the margins of such meetings, there are repeated opportunities for informal senior level business contacts.

Market outcomes

Profitability

- 6.75 We have conducted an assessment of the profitability of the Majors' aggregate operations across GB in accordance with our profitability framework, as set out in Appendix 4.1. We have tailored this framework specifically for the purpose of assessing aggregates profitability and we set out these aggregates-specific methodologies in Appendix 6.3. Appendix 6.3 also sets out our detailed results and our interpretation of aggregates profitability in GB.

- 6.76 We assess the Majors' profitability by comparing their return on capital employed (ROCE)²³ with their cost of capital. We initially calculated their return on capital employed by using accounting information prepared on a (modified²⁴) HCA basis, the basis on which the Majors routinely prepare their financial information. We then sought to estimate the Majors' ROCE on an economic basis where the value placed on the capital employed within aggregates reflected our best estimate of its current value to the business, ie on a CCA basis. The principal area of focus for aggregates was the value to be placed on mineral-bearing land.
- 6.77 ROCEs based on the Majors' own valuation of their assets (modified) HCA basis suggest that returns have generally been low to modest across these businesses over the last five years. Each Major has experienced a substantial decline in its returns following the slump in demand from 2008 onwards. Although returns recovered in 2010 and even more so in 2011, they have not returned to 2007 levels.
- 6.78 We have sought to revalue mineral-bearing land on the basis of inflated purchase cost so that the real value of the initial investment is maintained in purchasing power terms. This approach to asset valuation avoids the inherent circularity of valuing mineral resources on the basis of their revenue-generating potential, the basis on which their market value is normally assessed.²⁵
- 6.79 Once we reassess the Majors' mineral-bearing land values to reflect inflated cost, this leads to an increase in ROCE for those Majors which have revalued these assets to reflect market value more recently and a decrease in ROCE for those Majors which have not.
- 6.80 The exercise of seeking to revalue the Majors' mineral-bearing land has highlighted the difficulty of fully capturing in our analysis the profitability arising from owning the mineral-bearing land when its commercial potential is first recognized. Measured profitability will therefore reflect the degree to which the identified original purchase cost for the land reflected the revenue-generating potential from its commercial extraction. This means that, even if the Majors are able to identify original purchase cost, and only three of the five have been able to do so for purchases occurring before 2000, profitability assessed on the basis of inflated cost will not necessarily reflect all the returns from the land and will therefore be artificially low.

Margins

- 6.81 Appendix 6.4 presents the methodology for our analysis of cost structures and profit margins. Appendix 6.5 presents the results of our analysis of the cost structures and the profit margins of the aggregates operations of the Majors, and Appendix 6.6 presents the results of our analysis of the cost structures and the profit margins of the aggregates operations of the medium-tier independents.
- 6.82 Our analysis shows that, for each Major, aggregates margins (at divisional level) have been gradually falling over the period 2007 to 2011—with price increases being outpaced by growth in variable costs. Our analysis of the 'mid-tier' aggregates pro-

²³ ROCE is a measure of profitability. For this purpose it is measured as the operational profit for a period divided by the value of the operational net assets relevant to the same period expressed as a percentage.

²⁴ Some Majors have revalued some of their fixed assets including mineral-bearing land.

²⁵ This is because market value will be closely related to the discounted present value of the expected revenue from operations less running costs and net closure costs. As such an approach would embed in capital values any excess economic profits expected to arise from further commercial extraction, it is wholly unsuitable for the purpose of assessing whether profitability is in any sense excessive.

ducers shows significant variation in margin levels and volatility over the period 2007 to 2011.

- 6.83 Our analysis of the Majors' margins for their aggregates operations (where data was available) indicated that, with the exception of one Major, margins on internal sales (ie aggregates sold to their own downstream businesses) were significantly higher than on external sales. We examined further the reasons for this.
- 6.84 [X] told us²⁶ that our analysis showing that its net margins were higher on external sales than internal sales was not accurate because the CC removed intradivisional sales from its analysis but not the associated delivery costs. [X] argued that, once this was corrected, the analysis showed that margins on internal sales were higher than margins on external sales. According to [X], this was likely to reflect the differences in product mix, the location of internal and external customers and the total volumes purchased.
- 6.85 Tarmac told us²⁷ that it did not set its internal prices artificially high to increase external prices for RMX. It noted that such a strategy would not be effective given intense competition in the supply of RMX. Tarmac said that it did not set prices of RMX on a cost-plus basis and therefore the internal transfer price that Tarmac set for aggregates had no impact on the external selling price of RMX. It said that its internal prices for aggregates were set for internal accounting purposes to allow for a return to be made on Tarmac's high fixed-cost upstream investments.
- 6.86 Hanson and Tarmac said²⁸ that they had policies which resulted in their internal transfer prices for aggregates being higher than their external prices. Both said that their policies would not affect competition for RMX (but might affect the apparent profitability of their RMX businesses).²⁹
- 6.87 Lafarge, Aggregate Industries and Cemex said³⁰ that they tried to set their internal transfer prices to be as close as possible to the external price, and that any indication in our analysis that this was not the case was likely to be due to product mix/geography/haulage differences.
- 6.88 In light of the Majors' explanations of their aggregates transfer pricing policies, we did not analyse further the apparent differences that we found between their margins on internal sales and their margins on external sales in the context of our aggregates competitive assessment. However, we consider the impact of aggregates transfer prices further in relation to RMX profitability and margins—see Appendix 6.5. We also consider the role of internal transfer prices in our assessment of the effects of vertical integration in Section 10.
- 6.89 Our analysis of cost structures for the Majors' aggregates divisions showed that there were considerable differences in their cost structures. Even when we partially controlled for product type, eg crushed rock, we found significant variations in their cost structures.

²⁶ [X]

²⁷ [Tarmac response to updated issues statement](#).

²⁸ [Hanson](#) and [Tarmac](#) second hearings.

²⁹ Hanson told us that its internal prices and accounts were artificial since no real sale actually ever took place internally in relation to such pricing.

³⁰ [Lafarge](#), [Aggregate Industries](#) and [Cemex](#) second hearings.

Price-concentration analysis and entry and exit analysis

- 6.90 A PCA uses econometric techniques to examine the relationship (if any) between the price for a good in an area and the strength of competition to supply that good in that area. For the purposes of this investigation, we undertook a PCA to understand, on average across GB, the relationships between the prices of aggregates and the extent of competition in local construction aggregates markets, using the catchment areas described in paragraph 6.14.
- 6.91 The aim of our PCA was to assess whether, and how, the relationship between prices and the extent of competition varied by type of competitor,³¹ taking into account the size of plants and their proximity to the customer, and the identity of competitors. In this analysis we looked at the areas around job sites rather than at the areas around the locations where aggregates are produced (eg quarries), on the grounds that prices at the same quarry and for the same product varied across customers, and because this more accurately reflected the choices available to customers when deciding from which company to purchase their aggregates. Details of our methodology, including the model we developed, the data we used and how we measured competition in local markets, are set out in Appendix 6.7.
- 6.92 Our PCA produced mixed results, but generally the effects of increased competition on price, where they existed, appeared relatively small. In broad terms:
- (a) The presence nearby of non-Major firms appears to have either no effect on the Majors'³² pricing, or a positive price effect (a positive price effect means that the presence of independents was associated with higher prices in a local market).³³ This suggested that the presence of non-Major competitors did not have a clearly discernible effect on the Majors' prices.
 - (b) The presence nearby of other Majors had positive effects on Majors' pricing in some cases and negative effects in other cases (a negative effect means that the presence of other Majors was associated with lower prices in a local market). However, these price effects, where they existed, tended to be relatively small (about 1 to 2 per cent of the purchase price).
 - (c) There was no consistent statistically significant effect on prices of a greater number of aggregates sites (ie more aggregates sites nearby were sometimes associated with higher prices and sometimes with lower prices, although the effect was often not statistically significant).
 - (d) There was little evidence from our PCA that a greater number of recycled aggregates plants in an area imposed stronger constraints on primary aggregates prices.³⁴
 - (e) Our PCA did, however, show that quantity discounts appeared to be important in explaining variations in prices that customers paid. We found that larger customers paid lower prices.

³¹ We made a distinction between the five Majors and the non-Majors.

³² In the context of our PCA and our E&EA, all references to the Majors are references to the pre-2013 Majors.

³³ These were results of our main analysis; sensitivity analysis showed no consistent statistically significant effect (ie in some cases the effect on prices was positive and in some cases negative).

³⁴ Although there were some statistically significant price effects from additional recycled aggregates plants near job sites, these price effects were small and often positive (ie more recycled aggregates plants were associated with higher prices on average). We noted, however, that the PCA produced average results across local markets, and that the available data on recycled aggregates plants might not be comprehensive.

- 6.93 An E&EA uses econometric techniques to examine how prices may change with the entry or exit of a competitor in a local area. For our investigation, we explored the impact on prices of the entry and exit of competing aggregates plants near aggregates customers' job sites. Details of our methodology, including the model we developed and the data we used, are set out in Appendix 6.7.
- 6.94 In a competitive market with few suppliers, with all else equal, entry would generally be expected to result in prices falling, whereas exit could be expected to result in prices rising. However, the impact on prices could be expected to differ depending on the strength of the constraint posed by the plant entering or exiting the market, and therefore with this analysis we attempted to understand whether the impact of entry and exit depended on the identity of the owner of the entering or exiting plant and the plant's proximity to the customer. We found little evidence that entry or exit of plants had an effect on prices.
- 6.95 With respect to both our PCA and our E&EA, we noted that the average effects that we observed might hide local or regional variability in competitive constraints, to the extent that they existed.
- 6.96 The Majors told us that there was lots of local variation in aggregates markets, so it was difficult to generalize about the role of Majors, independents, recycled and secondary aggregates. According to the Majors (as set out in paragraph 6.119 to 6.123), aggregates markets are very competitive, with lots of choice of supplier and considerable excess capacity. The Majors told us that this explained the lack of impact on prices in our PCA and our E&EA of the number of competitors and the presence or absence of recycled aggregates in a local market. The Majors regarded our PCA and E&EA results as evidence supportive of the position that aggregates markets are competitive.
- 6.97 Some parties raised concerns about our methodology and the data on aggregate site entry and exit for the E&EA.³⁵ Where appropriate, we have carried out extensive sensitivity analysis (see Appendix 6.7), and found that the results of these robustness checks did not change our conclusions. With respect to E&EA, we noted that this analysis could be more prone to inaccuracies in the data on aggregate plant entry and exit, and therefore placed less weight on the findings from the E&EA.

Conduct

- 6.98 To supplement the evidence we obtained on the conduct of aggregates producers and aggregates customer from parties' submissions and hearings with parties, we undertook two pieces of analysis: (a) our aggregates case studies and (b) our analysis of price announcement letters for aggregates.

Aggregates case studies

- 6.99 These comprised both telephone interviews and a document review for two areas of GB: South Wales and the west of East Anglia (see Appendix 6.8, which sets out further details on our aggregates case studies). The two case study areas were both characterized by relatively high levels of concentration in terms of shares of supply by the Major aggregate producers.

³⁵ With respect to the PCA methodology, Tarmac and Lafarge raised concerns regarding our urban/non-urban classification of sites. Tarmac, Lafarge and Hanson were concerned that data on entry and exit might not accurately measure entry and exit events for the purposes of an E&EA.

Telephone interviews

- 6.100 From our telephone interviews of aggregates customers and non-Major aggregates suppliers in the two case study areas we investigated, we found that:
- (a) Consolidation of aggregates producers might have diminished local competition.
 - (b) Some aggregates producers appeared to operate in more specialized aggregates products and so might not constrain directly producers of construction aggregates.
 - (c) Most customers of aggregates producers appeared to be happy with the sufficiency of competition for primary aggregates and the ability of independent producers to exercise a competitive constraint on the Majors.
 - (d) Recycled aggregates provided a degree of competitive constraint on primary aggregates.
 - (e) Independent RMX producers appeared to be able to compete against the Majors albeit that they might offer slightly different services (eg smaller concrete pours) at (potentially) higher prices.
 - (f) The fact that independent RMX producers might not be vertically integrated into aggregates production did not appear to prevent them competing against the Majors.
 - (g) Save for evidence from one interviewee, taken as a whole, the evidence obtained from the case study telephone interviews did not suggest that there were anti-competitive outcomes as a result of coordination in either of the case study areas.
 - (h) Save for evidence from two interviewees, the evidence obtained from the case study telephone interviews did not suggest that independent RMX producers were being vertically foreclosed (see paragraphs 4.30 to 4.32) in either of the case study areas.
 - (i) Some market participants considered that the aggregates levy disadvantaged smaller aggregates producers whilst others did not consider that the aggregates levy distorted competition.
 - (j) There were some concerns about the planning regime (eg that it took a long time to obtain planning permission for a new quarry/site extension).

Case study document review

- 6.101 We reviewed a large number of internal documents related to the South Wales and the west of East Anglia case study areas provided to us by the Majors. Our review:
- (a) indicated that there were multiple contacts between the Majors across markets. These included regional meetings across the industry and private meetings organized between the Majors. The existence of shared sites and quarries and various cross-supply agreements established a degree of interdependence between the Majors;
 - (b) indicated that there was a degree of transparency with respect to prices across the market. Each of the Majors seemed to have information on the prices applied

by its competitors—either from the customers who reported on competitors' prices, or from the competitor directly where there was a cross-supply agreement between the Majors;

- (c) revealed the level of insight that each Major had with respect to the market and its competitors. It appeared from the documents that the Majors were operating in the market aware of the profile and position of each of their competitors; and
- (d) contained evidence of various discussions and internal business and strategy reports that demonstrated that the Majors were competing with each other as they focused on gaining market share or pursuing competitors' customers to switch to their services.

6.102 The evidence we obtained from our case study telephone interviews and from our case study document review in the South Wales and the west of East Anglia areas indicated a lack of significant and widespread competition problems in relation to the supply and acquisition of aggregates in these areas. In light of this evidence, and in order to make best use of our resources, we decided not to undertake any further work in additional case study areas.

Price announcement letters for aggregates

6.103 We analysed the price increase announcement letters sent by the pre-2013 Majors (that is, Aggregate Industries, Cemex, Hanson, Lafarge and Tarmac—which we refer to for simplicity in this discussion as 'the Majors') to their aggregates customers. These are letters sent to inform the customers of the Majors' intentions to increase the price of aggregates products in the near future. Announcements usually take place at least once a year (around January) but can also happen more frequently in a year (eg in April and/or in June). The letters are usually sent around one to three months before the price increase is intended to become effective.

6.104 The aim of our analysis of these letters was to understand whether there were patterns in the price increase announcement letters which may indicate that these letters are used as a mechanism for reaching common understanding on the level of prices in the industry or on the direction and amount by which prices should increase. In this context, this could be the case if we found that there is a degree of parallelism in the announcement dates and the magnitude of the notified price changes. We also conducted an analysis of how and whether the announced price increases are translated into higher average realized price increases, to understand how effective any such mechanism for reaching a common understanding might be in practice.

6.105 Details of the Majors' explanations for sending out price announcement letters for aggregates are in Appendix 6.9. The Majors made the following general points:

- (a) The announced price increases took into account forecasts of likely cost inflation in the coming year and financial targets, and, on occasion, under-recovery of cost increases in the current year.
- (b) The announced price increases were aspirational only. They served as a starting point for negotiations with customers and did not reflect actual price increases agreed with customers.

6.106 We found that, over the period of time we analysed, there was parallelism between the Majors in relation to the dates of their price increase announcements, in particular for the January price increases, but also for some of the mid-year price increases. Although this can be explained at a general level by the Majors' annual price review

processes (in relation to the January announcements) or changes in common regulatory costs (such as changes to the aggregates levy in April), the parallelism in the dates of the announcements is notable. For example, the timing of the price increase announcement for 1 June 2010 was relatively unusual and was not related to changes in the aggregates levy.

- 6.107 We also observed that the level of the announced price increases were on many occasions quite similar between the Majors for each product group. The price announcements of Majors which were not first to announce in most cases accommodated the announcements of Majors which had announced earlier but sometimes also undercut them, with the exception of [redacted]. Although we lacked some data with respect to exact announcement dates and we could not therefore generalize the trends we observed, we found that on many occasions Aggregate Industries and Tarmac were the first to announce price increases.
- 6.108 We compared announced price increases with changes in realized prices. We found that in almost all the cases that we analysed, the Majors were able to increase their average prices following one of their own price increase announcements, although this increase was [redacted] of the announced price change. There were cases though where the Majors achieved an increase that was larger [redacted].
- 6.109 Further detail and the limitations to our analysis are presented in Appendix 6.9.

Effect of market developments

- 6.110 The key recent developments in the relevant markets are described in paragraphs 1.12 to 1.19, namely in 2013: the creation of Lafarge Tarmac, the entry of HCM and the acquisition by Hanson of Tarmac's 50 per cent stake in MQP (previously a 50:50 JV between Hanson and Tarmac). We set out in paragraphs 4.35 to 4.37 how we have taken them into account.³⁶
- 6.111 We set out the views of the pre-2013 Majors on the entry of HCM and the creation of Lafarge Tarmac as part of our competitive assessment of cement (see Appendix 7.15), since their comments largely focused on the impact of these changes on cement.
- 6.112 In relation to GB aggregates markets, these market developments resulted in:
- (a) the combination under shared ownership of the majority of the aggregates operations of Lafarge and Tarmac. At its inception on 7 January 2013, Lafarge Tarmac owned 134 primary aggregates quarries and various other operations including 38 recycling and secondary aggregates sites;
 - (b) the entry of HCM into the GB aggregates markets, with (at its inception) six primary aggregates sites and one aggregates depot; and
 - (c) the exit of Tarmac from the MQP JV. MQP operates two active quarries as well as six asphalt plants.
- 6.113 Table 6.2 shows the effect of these changes on shares of supply of aggregates in GB. As set out in paragraph 6.10, Lafarge Tarmac is now, by some margin, the

³⁶ The following discussion does not reflect the sale by Aggregate Industries of a number of aggregates operations (and asphalt, RMX and concrete block operations) in Scotland to Breedon Aggregates in April 2013. This transaction was referred by the OFT to the CC on 24 September 2013. We do not consider that this market development alters the overall conclusions of our assessment of competition in the GB aggregates markets.

largest producer of aggregates with a GB share of primary aggregates of around [X] per cent. Compared with the other Majors, HCM is a relatively small player in GB aggregates markets taken as a whole.

- 6.114 Following the formation of Lafarge Tarmac and HCM, and Hanson acquiring ownership of MQP in full, the figures for the concentration of local aggregates markets in paragraphs 6.19 and 6.20 above need to be slightly adjusted:
- (a) 89 (rather than 90) per cent of job sites where aggregates were purchased and delivered in 2011 had a choice of more than five suppliers within the 80 per cent catchment distances around those sites;
 - (b) in the catchment areas around 11.4 (rather than 11) per cent of job sites, the largest company had a market share (by 2011 sales volume) of more than 50 per cent; and
 - (c) in the catchment areas around 28.5 (rather than 22) per cent of job sites, the four largest companies collectively had a market share of more than 90 per cent.
- 6.115 These figures indicate a relatively high degree of concentration in a slightly larger number of local aggregates markets as a result of recent market developments.
- 6.116 At a local level, the CC in its Anglo–Lafarge JV inquiry report identified those local overlaps between the aggregates operations of Lafarge and Tarmac which would have created competition problems, and required remedies that would be effective in addressing those concerns.³⁷ While there will have been some increases in local concentration as a result of the creation of Lafarge Tarmac (eg where the overlaps in the pre-JV operations of Lafarge and Tarmac were not found to cause competition problems or where the CC’s remedy did not require divestment to remove the entire overlap), the CC in its Anglo–Lafarge JV inquiry report did not expect any such increases in local concentration to give rise to competitive harm, once the divestitures have been implemented.
- 6.117 Overall, for the reasons set out in paragraphs 6.112 to 6.116, we considered that recent market developments did not have a material impact on our competitive assessment of GB aggregates markets.

Our assessment

- 6.118 As set out in paragraph 4.21, we assessed whether features of GB aggregates markets gave rise to one or more AECs as a result of unilateral market power or as a result of coordination.

Unilateral market power

Parties’ views

- 6.119 Aggregate Industries told us that its own analysis showed that the few local areas with high concentration of aggregates suppliers were areas of low demand or low availability of primary aggregate resources for geological reasons. According to Aggregate Industries, there was a strong positive correlation between the number of suppliers in an area and demand in that area.

³⁷ Anglo–Lafarge JV final report.

- 6.120 Lafarge said that having four competing suppliers was sufficient for a competitive outcome (and that three might also be sufficient) given that suppliers of aggregates were likely to have spare capacity.
- 6.121 Cemex said that there was intense competition in local aggregates markets. It said that it was unable to comment further as the CC had not identified those local markets in which there were fewer competitors and/or higher shares of supply.
- 6.122 Hanson said that there were high levels of competition and customer choice for aggregates, as evidenced by the large number of producers, the high numbers of competitors in local aggregates markets as shown in the CC's analysis, surplus capacity across aggregates markets in general and low levels of profitability.
- 6.123 Tarmac did not consider that there was unilateral market power in any aggregates market. It noted that, in its view, barriers to entry were substantially lower for secondary and recycled aggregates, and that any incumbency advantage in aggregates was enjoyed by hundreds of incumbents. Further, it said that capital cost was only sometimes a barrier to entry. It also said that nearly 100 per cent of customers had a choice of six or more suppliers.
- 6.124 In response to our provisional findings, [an aggregates customer] told us that since the Anglo–Lafarge JV it now had minimal alternative suppliers and as a direct consequence it had experienced reduced competitiveness of pricing and availability of product (in particular with respect to sand and gravel). The aggregates customer concerned told us that this was due to the merger of Lafarge and Tarmac operations and was a situation made worse by the JV's ongoing rationalization of its operations. The customer submitted that it was also experiencing similar issues with HCM due (according to the customer) to HCM focusing its efforts on producing single-size limestone aggregates for its own downstream RMX operations. The customer told us that this had created a shortage of prime single-size products due to the lack of alternative and demonstrably similar materials being available in this particular market place. In this context, we noted that the CC inquiry into the Anglo–Lafarge JV considered all areas where Lafarge and Tarmac had overlapping operations prior to the JV. As a condition of permitting the Anglo–Lafarge JV to proceed, the CC required Lafarge and Anglo American to make divestments in any areas where the CC found that the Anglo–Lafarge JV was likely to result in an SLC (see paragraphs 1.15 and 1.16).

Assessment

- 6.125 In relation to unilateral market power, our analysis indicates that:
- (a) There are significant barriers to entry into local aggregates markets through the supply of primary aggregates. However, there are fewer barriers to the expansion of existing aggregates operations, and to entry through the supply of recycled and secondary aggregates (see paragraphs 6.30 to 6.72).
 - (b) Most customers have a choice of several different aggregates suppliers, and the extent of high concentration in local markets is limited (see paragraphs 6.19 and 6.20).
 - (c) According to our PCA and E&EA, when customers have a wider choice of aggregates supplier (including suppliers of recycled aggregates), this does not clearly lead to lower prices. However, we note that our PCA and E&EA produced average results across GB, and might hide local or regional variability in competitive constraints (see paragraphs 6.90 to 6.97).

- (d) The Majors' ROCEs in their aggregates operations have been low to modest over the last five years (albeit on a GB-wide basis), with the exception of one company which appears to have had significantly higher returns than the others (see paragraphs 6.75 to 6.80).
- (e) For each Major, aggregates margins (at divisional level) have been gradually falling over the period 2007 to 2011—with price increases being outpaced by growth in variable costs. Our analysis of the medium-tier independent aggregates producers shows volatility and significant variation in margin levels over the period 2007 to 2011 (see paragraphs 6.81 to 6.89).
- 6.126 The case study interviews suggest that the presence of independent aggregates producers generates downward pricing pressure and that consolidation of aggregates producers has diminished this local competition. However, taken as a whole the case study documents and the case study interviews do not appear to suggest that unilateral market power is a problem in either of the two case study areas (see paragraphs 6.99 to 6.102).
- 6.127 Overall, we did not find evidence indicating widespread competition problems across multiple local markets arising from the ability to exercise unilateral market power in the supply of construction aggregates in GB. Our detailed analysis of the supply of aggregates in two areas of GB also did not find any evidence of competition problems with respect to these two areas. Given the lack of concerns raised by our analysis, both across multiple local areas and in the two specific areas assessed, and given constraints on the time and resources available for our investigation overall, we did not carry out further analysis of individual local markets for aggregates. We have not identified any features giving rise to an AEC as a result of unilateral conduct in relation to the supply of construction aggregates in GB.

Coordination

Parties' views

- 6.128 Tarmac told us that coordination in aggregates markets was not possible. It noted that shares of supply on a national level were not relevant as aggregates markets were local. Further, in Tarmac's view, barriers to expansion were not particularly high due to widespread excess capacity, and entry costs were not prohibitive, especially if land and mineral rights were leased. Tarmac argued that JVs and membership of trade associations did not increase transparency: production-only JVs did not sell jointly, and no trading or commercial contract information was shared in any JV in which Tarmac was on the board. Tarmac noted that MPA data was aggregated and not granular enough to allow real insight into competitors' behaviour.
- 6.129 Aggregate Industries told us that coordination in GB aggregates markets was not a credible concern. It said that:
- (a) Variation between local markets, low levels of concentration, sales via bilateral negotiations, a large and diverse customer base, ease of switching and excess capacity deterred coordination.
- (b) National shares of supply showed no symmetry between the top five aggregates producers, so there was no alignment of incentives to coordinate.
- (c) Aggregate Industries' own analysis showed that the few local areas with high concentration of aggregates suppliers were areas of low demand, or low availability of primary aggregates resources for geological reasons.

- (d) Whilst there might be barriers to entry in aggregates, barriers to expansion were low and there was currently considerable excess capacity.
- (e) Whilst aggregates of a given sub-type might be relatively homogeneous, there were other factors affecting the nature of supply such as haulage, terms and conditions of supply and so on that would make coordination very difficult.
- (f) The results of the CC's PCA and E&EA for aggregates reflected low levels of demand and a very competitive market, rather than coordination.

6.130 Hanson said that³⁸ the following factors precluded coordination in aggregates:

- (a) the high degree of competition (both Majors and non-Majors) in local aggregates markets;
- (b) product and geographic differentiation;
- (c) the availability of secondary and recycled material;
- (d) limited transparency in the market as a result of confidential bilateral purchasing negotiations and large numbers of customers and suppliers; and
- (e) companies that made price increase proposals following the first proposal sometimes undercut the price increase of the first proposal.

Assessment

- 6.131 Taking into account what the Guidelines say regarding the assessment of whether coordination is giving rise to an AEC (see paragraphs 4.28, 8.203, 8.204, 8.239 and 8.273), we note that there are some aspects of the supply of aggregates in GB that may make at least some local markets susceptible to coordination. These include the high market shares held by the Majors in some local markets (see paragraph 6.20), product homogeneity (see paragraph 6.22), barriers to entry into the production of primary aggregates (see paragraphs 6.69 to 6.72), structural links between companies (see paragraph 6.73) and price announcement behaviour (although any patterns in this behaviour are not clear—see paragraphs 6.103 to 6.109).
- 6.132 However, we found that there were several factors that reduced our concern that coordination might be occurring in local aggregates markets. These factors are:
- (a) geographical differentiation of aggregates products (see paragraph 6.23);
 - (b) wide variation in competitive conditions (eg the number and identity of suppliers) from one local area to another (see paragraph 6.20 and Appendix 6.7); and
 - (c) the Majors' relatively modest (in general) returns and falling margins on their aggregates operations (see paragraphs 6.77 and 6.82).
- 6.133 The results from our aggregates case studies work (see paragraph 6.102) also reduced our concern that coordination might be occurring in the two areas which we assessed. Neither the document review for the case study areas nor our interviews with competitors and customers suggested that coordination might be occurring in these local areas.

³⁸ [Hanson response to updated issues statement.](#)

Aggregates competitive assessment: conclusions

- 6.134 Overall, we did not find evidence indicating widespread competition problems across multiple local markets (whether as a result of unilateral market power or coordination). Our detailed analysis of the supply of aggregates in two specific areas of GB also did not find any evidence of competition problems with respect to these two areas. Given the lack of concerns raised by our analysis, both across multiple local markets and in the two specific areas we assessed, and given constraints on the time and resources available for our investigation overall, we did not carry out further analysis of individual local markets for aggregates. We have not identified any features giving rise to an AEC in any market in GB for the supply of construction aggregates.
- 6.135 As noted in paragraph 6.117, we considered that recent market developments did not have a material impact on our competitive assessment of GB aggregates markets.

7. Cement: evidence and analysis

- 7.1 As described in paragraph 5.38, we have defined a single relevant product market for bulk grey cement including different types of cement (ie CEM I, CEM II, CEM III etc) and imported and GB-produced cement. We have defined bagged cement as a separate product market. As we explain in the footnote to paragraph 5.1, Hanson is the sole producer of GGBS in GB, and Lafarge Tarmac is the sole producer of GBS—the key raw material input into the production of GGBS—in GB. Both Lafarge Tarmac and Hanson are also significant producers in the GB cement markets. We therefore considered that the sole production by these parties of GBS and GGBS in GB respectively warranted consideration, and we defined a relevant market for GGBS.¹ Our assessment of the relevant market for GGBS is set out in paragraph 5.78: we have defined a separate relevant product market for GGBS, including imported and GB-produced GGBS. In terms of the geographic scope of all these markets, we have focused primarily on competition at a GB level, including competition from imports.
- 7.2 In this section, we set out the evidence available to us and the analysis we carried out as part of our assessment of whether there may be features in the bulk and/or bagged cement markets that give rise to one or more AECs through unilateral market power or coordination (see paragraph 4.20). Because of the volume of evidence and analysis, our interpretation of this material and our competitive assessment are in a separate section of this report (Section 8). Much of the same evidence is relevant to consideration of the possible existence of both unilateral market power and coordination.
- 7.3 Paragraphs 4.25 and 4.28 contain key extracts from the Guidelines on how the CC will conduct its assessment of unilateral market power and coordination. In light of the Guidelines, as inputs to our assessment in Section 8 of whether unilateral market power or coordination may be giving rise to one or more AECs, in this section we present the evidence and our analysis on:
- aspects of cement market structure;
 - cement market outcomes;
 - conduct in the cement market;
 - the impact of recent market developments for cement only (as there have been no developments in the GGBS market during the course of our investigation requiring separate consideration); and
 - the GGBS supply chain.
- 7.4 We recognize that there is some blurring of the boundaries between what could be considered to be conduct in a market and what could be better considered to be a market outcome or even part of the structure of the market. In this report, we have categorized our analysis according to our view as to the main aspect of the competitive process to which it is relevant, but this categorization does not affect the weight we put on the analysis, and we note that the same evidence can cast light on more than one aspect of the competitive process.

¹ On use of the term 'relevant market' in this context, see paragraph 5.3.

Cement: market structure

7.5 In light of what the Guidelines say about pertinent market characteristics for the AEC assessment (see paragraph 4.12) and our unilateral market power and coordination theories of harm (see paragraph 4.20), in this subsection we look at several aspects of the structure of the bulk and bagged cement markets in GB:

- (a) market concentration;
- (b) shares of production capacity;
- (c) product and customer characteristics;
- (d) vertical integration into downstream operations;
- (e) barriers to entry and expansion;
- (f) cement imports;
- (g) the role of GGBS and PFA; and
- (h) other relevant aspects of market structure.

Market concentration

7.6 Table 7.1 shows the annual cement market shares of GB producers and cement importers (including Aggregate Industries), based on sales volumes of all grey cement (bulk and bagged²) in GB, over the period 2007 to 2011.³

TABLE 7.1 Annual market shares based on sales volume of all grey cement, 2007 to 2012

	GB producers				Cement importers	
	Cemex	Hanson	Lafarge	Tarmac	Aggregate Industries*	Independent importers
2007	22	22	41	6	2	6
2008	21	21	41	7	3	7
2009	22	20	36	9	3	9
2010	21	20	36	9	4	9
2011	21	19	37	9	4	9
2012‡	21	19	37	10		12

Source: Parties' data and CC analysis.

*Aggregate Industries did not provide sales for 2007. We have estimated sales for 2007 for Aggregate Industries, based on data provided for 2008 to 2011.

†Independent importers comprise [X]. Sales volumes for Independent importers were not always available for each year. Where this is the case, we have calculated volumes for the missing years using linear interpolation.

‡The 2012 share attributed to 'independent importers' includes Aggregate Industries. The 2012 figures for importers are based on MPA data.

7.7 Table 7.1 shows that there are four large suppliers of grey cement (the GB producers), and a competitive fringe (the cement importers). The four-firm concentration ratio ranges between 86 and 92 per cent over the period 2007 to 2012, and the three-firm concentration ratio ranges between 77 and 85 per cent over the same

² Bulk and bagged market shares are shown separately in Appendix 7.1.

³ We also calculated quarterly market shares on a similar basis (see Appendix 7.1), which showed a lack of volatility from quarter to quarter.

period, both of which suggest that the market is highly concentrated.⁴ We have also calculated the Herfindahl-Hirschman Index (HHI) based on the market shares in Table 7.1 and find that it varies between 2,220 and 2,744 across the period, also suggesting that the market is highly concentrated.⁵

- 7.8 We see from Table 7.1 that Cemex has had a fairly stable market share over the period 2007 to 2012, losing in total one percentage point share during the period. Hanson's market share reduced by three percentage points and Lafarge's market share reduced by four percentage points between 2007 and 2012.⁶ We can see from Table 7.1 that this loss of market share by Lafarge (and to a lesser extent by Hanson and Cemex) was to the benefit of Tarmac, whose share increased from 6 to 10 per cent between 2007 and 2012) as well as to cement importers (Aggregate Industries increased its share by one percentage point over the period for which it provided sales data (2008 to 2011) and independent importers increased their share by three percentage points over the period 2007 to 2011).
- 7.9 As well as the relatively small annual changes in market shares over this time period (as described in the previous paragraph), our analysis of month-by-month changes in shares of sales (see paragraphs 7.184 to 7.187) showed some correlation between a given GB producer's gains in share in one month and its losses in share the next month, which would help explain the small market share changes we observed on an annual basis.
- 7.10 We also analysed shares of production of cement in GB over the period 2007 to 2012, as shown in Table 7.2. Over the last five years, Cemex's share of GB production remained fairly constant, increasing from 23 per cent in 2007 to 24 per cent in 2012; Hanson's share remained stable at around 23 per cent between 2007 and 2012. Lafarge Group's share of GB production reduced somewhat over the period, from 46 per cent in 2007 to 43 per cent in 2012; and Tarmac Group's share increased over the period from 8 per cent in 2007 to 11 per cent in 2012. However, we note that Lafarge's share of production dipped in 2009 (by six percentage points compared with 2007), to then go back up in 2010 and 2011, which we considered likely to have been explained in part by the reduction in Lafarge's capacity—and the expansion in Tarmac's capacity—over this period (see paragraph 7.18).

TABLE 7.2 Shares of production of the GB producers, all grey cement, 2007 to 2012

	<i>per cent</i>					
	2007	2008	2009	2010	2011	2012
Cemex	23	24	26	25	24	24
Hanson	23	24	23	23	23	22
Lafarge	46	44	40	41	43	43
Tarmac	8	8	11	11	11	11

Source: GB producers' data and CC analysis.

- 7.11 A very closely related concept is each GB producer's share of volumes sold by all four GB producers. These shares are shown in Table 7.3, and show that, using this measure, the shares of each of the largest three GB producers varied by no more

⁴ The concentration ratio measures the combined market share of the largest firms in a market. For example, the 'four-firm' concentration ratio is simply the sum of the market shares of the four largest firms in the market.

⁵ The HHI reflects both the number of firms in the industry and their relative size, and is defined as the sum of the squares of all the market shares in the market, thus giving proportionately greater weight to the larger market shares. The HHI ranges between 0, in the case of a perfectly competitive market with infinitely many firms of the same size, and 10,000, in the case of monopoly. We did not calculate the HHI for 2012 as we did not have data on sales for individual importers.

⁶ Hanson told us that the decline in its market share had been significant for the review period, falling from about 24 per cent in 2006 to only 18.5 per cent in April 2012, a decline of more than 5 per cent.

than three percentage points over the whole period 2007 to 2012. As for production shares, we note that Lafarge's share dipped in 2009 (by four percentage points compared with its highest level in 2007), to then increase again in 2010 and 2011. The dip in Lafarge's share of sales was less pronounced than the dip in its production share.

TABLE 7.3 Shares of GB sales of the GB producers, all grey cement, 2007 to 2012

	<i>per cent</i>					
	2007	2008	2009	2010	2011	2012
Cemex	24	23	25	25	24	24
Hanson	24	24	23	23	22	22
Lafarge	45	45	41	42	43	42
Tarmac	7	8	11	10	11	12

Source: GB producers' data and CC analysis.

7.12 Table 7.4 shows the share of the total GB volumes sold by the three largest cement producers (Cemex, Hanson and Lafarge) held by each of Cemex, Hanson and Lafarge over the period 2007 to 2012.

TABLE 7.4 Shares of total Cemex, Hanson and Lafarge GB sales held by Cemex, Hanson and Lafarge, all grey cement, 2007 to 2012

	<i>per cent</i>					
	2007	2008	2009	2010	2011	2012
Cemex	25	27	29	28	27	27
Hanson	25	25	26	26	26	25
Lafarge	50	48	45	46	47	48

Source: GB producers' data and CC analysis.

7.13 During the same period, there was a large shock in cement demand (see paragraph 2.53). Demand reduced by 13 per cent between 2007 and 2008, and a further 23 per cent between 2008 and 2009 (an overall reduction of 34 per cent in two years). During 2010 and 2011, there was some small recovery in demand for cement (although demand for cement remained low compared with its 2007 levels): demand for cement increased by 5 per cent in 2010 and by 7 per cent in 2011. In 2012, demand for cement reduced again by 7 per cent, returning to about the same level as in 2010.

7.14 Table 7.5 shows the shares of production of cement and GGBS in GB of the four GB producers, over the period 2007 to 2012.⁷ The trends broadly match those for cement only, shown in Table 7.2, but with Hanson having a significantly higher share of production (as it is the only GB producer of GGBS), and the other producers having correspondingly lower production shares.

⁷ We did not include PFA because (a) PFA volumes are not comparable to GGBS volumes and cement volumes and (b) prices of PFA are much lower than those of GGBS and cement, which are close to each other.

TABLE 7.5 Shares of production of the GB producers, grey cement and GGBS, 2007 to 2011

	<i>per cent</i>					
	2007	2008	2009	2010	2011	2012
Cemex	20	20	22	22	21	21
Hanson	35	35	34	33	33	32
Lafarge	39	37	34	36	37	37
Tarmac	6	7	10	10	9	10

Source: GB producers' data and CC analysis.

7.15 As shown in Appendix 7.1, we also looked at shares of supply on several other bases:

(a) We looked at market shares based on sales volumes of bulk CEM I, volumes of bulk CEM I sold to external customers and volumes of bulk CEM I sold to independent customers and found more variation in these market shares.⁸

(b) We calculated market shares on a regional basis, and found that these showed more variation over the period 2007 to 2011.

Summary: market concentration

7.16 Our analysis shows that the supply of cement in GB is highly concentrated and that there have been relatively small annual changes in market shares (and shares of sales and production) over the period 2007 to 2012, despite the large slump in demand for cement (see paragraph 2.53). High concentration can be a cause of concern in relation to the both the possibility of unilateral market power and coordination (see the Guidelines, paragraph 101).

Shares of production capacity

7.17 Together, the four GB cement producers have ten cement plants in GB with capacity to produce clinker and cement, as well as one further plant without clinker production capacity but with capacity to grind clinker into cement. Our analysis of the cement capacity of each GB cement producer over time is set out in Appendix 7.2.

7.18 Our analysis shows that:

(a) Total clinker capacity and total cement capacity reduced between 2007 and 2011, as a consequence of the closure of three cement plants (Lafarge's Northfleet and Westbury plants and Cemex's Barrington plant), mothballing of kilns (Hanson mothballed one kiln at Ketton and Cemex mothballed one kiln at South Ferriby) [redacted].⁹

(b) The only producer to have increased cement capacity or clinker capacity during this period was Tarmac, which increased clinker (and therefore cement) capacity at its Tunstead plant in April 2008 [redacted].

(c) As a result of these changes in capacity, total capacity to produce clinker in GB reduced from around [redacted] Mt in 2007 to around [redacted] Mt in 2011, ie a 27 per cent

⁸ However, these CEM I market share figures reflect to a greater extent than the aggregated figures Hanson's internalization of bulk cement (predominantly CEM I) volumes in 2009 and the loss of external customers which it experienced around the same time.

⁹ Cemex's Rochester plant was closed in 2009 but was replaced by Cemex's Tilbury plant.

reduction in clinker capacity which is ‘immediately available’. If we also include mothballed capacity by Cemex,¹⁰ total reduction in capacity is [X] per cent over the period.

7.19 Table 7.6 sets out the shares of clinker capacity of the different GB cement producers in 2007 and in 2011.¹¹ The table shows that Lafarge has the greatest clinker capacity in GB (almost double that of Hanson and Cemex), and that Lafarge has reduced clinker capacity the most since 2007.

TABLE 7.6 GB producers’ number of cement plants and shares of clinker capacity in 2007 and 2011

	Number of GB cement plants*		per cent	
	2007	2011	Share of clinker capacity 2007	2011
Cemex	3	2	[20–25]	[20–25]
Hanson	3	3	[20–25]	[20–25]
Lafarge	6	4	[50–55]	[40–45]
Tarmac	1	1	[5–10]	[10–15]

Source: CC analysis based on data from Cemex, Hanson, Lafarge and Tarmac.

*Only cement plants with capacity to produce clinker are included in this table: grinding, blending and packing plants are excluded.

Summary: production capacity

7.20 Our analysis showed that companies’ shares of clinker capacity were similar to their market shares. Total cement capacity in GB reduced between 2007 and 2011, and the only producer to have increased capacity during this period was Tarmac. An understanding of companies’ capacities, and changes in those capacities, is useful in assessing both unilateral market power and coordination.

Product and customer characteristics

Product differentiation

7.21 Cement is a relatively homogeneous product: although there are different types of grey cement product (CEM I, CEM II and CEM III/IV) with different properties, there is scope for demand- and supply-side substitution between the different types of cement (see paragraphs 5.33 and 5.38). Similarly, although bulk and bagged cement are distinct product markets because there is little demand-side substitutability between them, they are produced from the same materials and there is some scope for supply-side substitution between them.¹²

7.22 The evidence we received from the GB producers regarding the distance over which they sold their cement is in Appendix 7.3. From this evidence, it appears that the geographic areas over which cement can be transported are quite large (for example, up to 100 miles). We also noted that each of the four GB producers sold cement in each GB region.

¹⁰ Cemex mothballed a kiln relatively recently; [X]. See Appendix 7.2.

¹¹ We do not show shares for years 2008 to 2010 as these are transition years (capacity changes occurring mid-year), which makes it difficult to calculate comparable annual capacity shares of the different producers.

¹² We explain in paragraphs 5.34 & 5.38(b) why we concluded that there were separate product markets for bulk and bagged cement.

Demand for cement

- 7.23 Cement is an input into other products, such as RMX, mortar, concrete blocks and precast concrete products. As such, the demand for cement is derived from demand for RMX and concrete products, and ultimately from demand for construction. As shown in Appendix 7.3, demand for cement is cyclical, with demand in any given year typically being higher in Q2 and Q3, and lower in Q1 and Q4.
- 7.24 Although demand for cement has reduced sharply in recent years as a result of the economic downturn, we did not observe that cement demand was volatile. In addition, there is a degree of visibility of a proportion of future demand for RMX and concrete products, and ultimately cement, through tendering for large-scale construction projects, which can start several years before the construction project is due to begin. Cement suppliers (or their downstream RMX or concrete products operations) may be approached by construction companies and asked for quotes at the tendering stage, which would give the cement suppliers some visibility over future demand for cement. However, even where cement suppliers are not approached by construction companies at the tendering stage, they may be able to estimate cement needs for the construction projects by reading tender documents, which are sometimes published. Cemex told us that the cement industry was not characterized by long-term supply contracts or contracts with volume commitments and long-term projects were frequently delayed, amended or cancelled, and that this limited the visibility of future demand for cement.¹³ However, contracts need not be long term, or be characterized by supply commitments, to provide some information on the overall level of demand for cement. Indeed, whilst large construction projects may, at an individual level, be delayed or cancelled, the number of such projects overall will give GB cement producers a view of future demand.
- 7.25 Further, the GB cement producers supply RMX and in some cases concrete products in addition to cement (see paragraph 2.79). As a result, they have further insight into shorter-term demand for RMX and concrete products, and therefore cement. This insight was unlikely to have warned producers of the scale of the downturn in 2007 to 2009 but in the normal course of events it would allow producers to have a good understanding of short-term demand.
- 7.26 These factors suggest that even if demand for cement is not particularly stable over time because of its dependence on general economic conditions, the GB cement producers are likely to have some insight into (short-term) demand movements.¹⁴

Customer characteristics

- 7.27 Our analysis of the main characteristics of bulk cement customers, and their purchasing behaviour, is in Appendix 7.9. We found that:
- (a) There were 900 customers (with 3,859 delivery sites) of delivered bulk cement across the period 2007 to 2011, with around 600 customers (with around 2,000 delivery sites, of which approximately 45 per cent are owned by the five Majors) active in any given year. The 20 largest customers (in terms of share of total cement volumes over the period 2007 to 2011, including internal sales) accounted for 77 per cent of total volumes, which includes the five Majors

¹³ [Cemex response to provisional findings](#), paragraph 6.9.

¹⁴ Cemex told us that the uncertainty in long-term demand introduced significant uncertainty, in particular in relation to capacity decisions. We agreed that capacity decisions would be affected by the uncertainty in long-term demand; however, pricing decisions are unlikely to be affected because these are normally based on shorter-term considerations.

accounting for 61 per cent of total volumes.¹⁵ Just over 200 customers purchased 5 kt or more of cement per year, and made up 95 per cent of total volumes.

(b) The vast majority of customers who were active in December 2011 had been purchasing cement at least since 2007, meaning that demand for cement tended to be long term.¹⁶ This was particularly the case for large customers (with purchases over 20 kt per year), as well as medium-sized customers (with purchases over 5 kt per year). Customers tended to stay with the same supplier for at least a year, and mostly for longer (two or more years).

(c) Around 85 per cent of customers sourced cement simultaneously from more than one supplier, but this was not true of individual job sites, of which 82 per cent sourced cement from only one supplier at any one time.

(d) The vast majority of cement was purchased at least monthly.¹⁷ Again, this was particularly true for large and medium-sized customers.

7.28 We therefore found that customers for bulk cement were largely fixed outlets with demand for cement which was largely predictable in the short term: they tended to purchase cement frequently and customer longevity was high. Although customers with several plants tended to source from more than one cement supplier, there was a high incidence of single sourcing at site level and a high frequency of deliveries. These factors would contribute to transparency of customer–supplier relationships. Further, the customer base was relatively concentrated (making monitoring of customer–supplier relationships covering the majority of cement volumes easier), but not so concentrated that the loss of a single customer would have a severe impact on profits (with the exception of Major customers and a few larger customers).

7.29 We also analysed the characteristics of bagged cement customers¹⁸ (see Appendix 7.9) and found that, as for bulk cement, customers purchasing bagged cement were fairly concentrated, but not so concentrated that the loss of a single customer would have a severe impact on profits (apart from a very few of the largest customers). We also noted that purchases of bagged cement tended to be frequent.

Summary: product and customer characteristics

7.30 We found that cement is a relatively homogenous product, both in product and geographic terms. While demand for cement is dependent on general economic conditions, there is some transparency of short-term demand movements. The customer bases for bulk and bagged cement are concentrated, but not so concentrated that the loss of a single customer would generally have a severe impact on profits. Customers for bulk cement are largely fixed outlets with demand for cement which is largely predictable in the short term: customers purchase cement frequently (as do bagged cement customers) and there is high customer longevity. There is a high incidence of single sourcing for bulk cement at site level.

¹⁵ Cemex told us in its [response to provisional findings](#) (paragraph 6.8) that, if GB cement producers were excluded, the top 15 cement customers only accounted for a minority of total sales of cement. We noted that, if GB cement producers were excluded, the top 15 customers still accounted for over 40 per cent of cement sales, and the top 50 customers accounted for half of cement sales. We therefore considered that, even excluding sales to the GB cement producers, the cement customer base remained concentrated. Moreover, we did not agree that the GB cement producers should be excluded from the analysis: as we explain in Section 8, we found that coordination was on sales of all cement, not just sales to independent customers.

¹⁶ The transaction data only started in 2007, and therefore we could not observe the exact year in which customers started purchasing cement where this was prior to 2007.

¹⁷ The transaction data was only available on a monthly (or quarterly in the case of independent cement importers) basis, and therefore we could not observe purchases which occurred on a fortnightly or weekly basis—instead these were treated as monthly purchases.

¹⁸ We did not analyse Tarmac bagged customers because [REDACTED].

- 7.31 These factors contribute to transparency and lack of complexity in these markets, giving companies a greater awareness of their rivals' behaviour, which, in some cases, can contribute to competition problems (eg coordination—see the Guidelines, paragraphs 252 and 254).

Vertical integration

- 7.32 The Majors consume a significant proportion of the cement they produce (or, in the case of Aggregate Industries, the cement it purchases) in their own downstream operations (largely RMX production but also in certain cases the manufacture of concrete products and mortar). Appendix 2.3, Table 1, shows, for each Major, the total sales of cement which are internal and external, as well as internal sales (ie sales to their own downstream businesses) as a proportion of total sales for the period from 2007 to 2011. Appendix 2.3, Table 1, shows that, during this period, there has been considerable variation between the Majors in the extent of vertical integration from cement into downstream operations, and that, for most of the Majors, there have been significant changes in the extent of internal consumption of cement.
- 7.33 We consider the impact of vertical integration on barriers to entry into the supply of cement in paragraph 7.86, and on the availability of information in the cement market in paragraphs 8.216 and 8.290. The impact of vertical integration on competition in the referred markets (over and above any role it might play in unilateral market power or coordination) is considered in Section 10 of this report.

Barriers to entry and expansion into GB cement production

- 7.34 In this subsection, we consider the potential for entry and expansion into GB cement production to act as a competitive constraint in the supply of cement.¹⁹ We look at possible modes of entry and expansion, the experience of entry and exit for these modes, and the extent of any barriers to entry and expansion. Further supporting evidence is set out in Appendix 7.4.

Possible modes of entry and expansion

- 7.35 We identified the following possible modes of entry and expansion into the production of cement in GB:
- developing a new cement plant in GB (or expanding an existing one); and
 - developing a grinding mill in GB (or expanding an existing one).

Evidence of past entry and exit

- 7.36 There are ten cement production plants in GB with capacity to produce clinker and cement. The most recent commissioning of a cement plant in the UK was at Tarmac's Tunstead works in 2004 where the original wet process plant was replaced by a dry process plant with an annual capacity of 825,000 tonnes. Following investment of £[~~8~~] million in 2008, the annual capacity was increased to 1 Mt.

¹⁹ We examine the constraint from imported cement, and the potential for entry and expansion via cement imports, in paragraphs 7.62–7.124.

7.37 In 2009, Cemex opened a cement grinding mill at Tilbury with an annual capacity of [redacted].²⁰

7.38 Five cement works have been closed since 2007, as shown in Table 7.7.

TABLE 7.7 Cement works closed in the UK since 2007

Location	Owner	Date closed	Clinker capacity Mt	Reason for closure
Northfleet	Lafarge	2008	[redacted]	[redacted]
Ridham (import terminal)	Lafarge	2008	[redacted]	[redacted]
Barrington	Cemex	2008	[redacted]	[redacted]
Westbury	Lafarge	2009	[redacted]	[redacted]
Rochester	Cemex	2009	[redacted]	[redacted]

Source: Lafarge, Cemex.

Cement plants: barriers to entry and expansion

7.39 We considered the evidence relating to the following possible barriers to entering the cement market via the construction of a new cement plant (or expanding production from an existing cement plant):

- upfront investment required;
- availability of raw materials;
- lead time and planning permission;
- emissions regulations;
- economies of scale; and
- barriers to expansion.

7.40 The GB producers²¹ told us that the most significant barrier to entry was the capital cost of building a new cement plant. The cost estimates given by individual parties are set out in Appendix 7.4. Estimates varied substantially depending on the capacity of the plant and other assumptions, ranging from £120 million for a small-scale plant up to £360 million for a large plant with an annual capacity of 1 Mt.

7.41 Other parties which do not currently produce cement in GB said that the extremely high capital cost for cement production was a barrier to entry. We were also told that uncertainty over the future demand for cement made financing difficult.

7.42 We were told that a significant barrier to entry was the need to develop a new limestone quarry to provide raw materials, and the associated issues with obtaining planning permission for that quarry. We were told that the quarry reserves would need to be able to support at least 25 years' cement production, which would amount to approximately 50 Mt. We were told that availability of high-quality limestone reserves could be a barrier to entry, not because limestone is a scarce resource in the UK, but because limestone occurred primarily in areas that were designated as national

²⁰ www.cemex.co.uk/ac/ac_pr_20090922.asp.

²¹ Aggregate Industries does not produce cement in GB. Aggregate Industries told us that it had no experience of cement production and therefore it did not offer any evidence.

parks or Areas of Outstanding Natural Beauty and that obtaining planning permission for a new quarry and cement plant in such areas would be very unlikely.

- 7.43 We were told that it would take a considerable time to develop a new cement plant because of the need to identify limestone resources, gather the necessary land holdings and to go through the planning process. Estimates for the length of time required varied depending on whether suitable sites and planning permissions were already in place, but could take 10 to 15 years. We were also told that there would be additional costs arising from the planning process.
- 7.44 Lafarge told us that there were significant uncertainties regarding the future cost to be imposed on carbon emissions. The uncertainty related particularly to the period after 2020 when, subject to carbon leakage considerations, the ETS would require all cement producers to pay for each tonne of carbon emitted (see paragraphs 2.54 to 2.61). It said that these uncertainties weighed heavily against potential new cement plant projects.
- 7.45 Moreover, we note that it may recently have become more difficult for new entrants to obtain carbon allowances than existing producers in certain circumstances. Under phase three of the EU ETS, which came into effect on 1 January 2013, 5 per cent of all free carbon allowances will be set aside in an NER for new installations, including capacity extensions to existing plants, which commence operations after 30 June 2011. Once the NER is exhausted, new installations will be required to purchase any carbon allowances they require (see paragraph 2.60).
- 7.46 The GB producers told us that economies of scale existed as larger cement plants could be operated more efficiently than smaller plants in terms of unit costs, since fixed costs were spread over a greater volume of sales. Average kiln capacity has increased substantially over the last 50 years.
- 7.47 We have not undertaken an analysis of plant-level economies of scale for cement plants. Therefore we have not formed a view on whether larger plants can achieve lower unit costs than smaller plants, although we note that for any given plant, unit costs are likely to fall as production volume increases. We also note that the average kiln capacity in 2009 was over 1 Mt per year, which we consider indicates that small-scale entry is unlikely.
- 7.48 The GB producers told us that some economies of scale arose through operating more than one site, because (a) logistics costs could be reduced if production could be matched better geographically with demand; (b) production could be scheduled efficiently across plants; and (c) overall scale allowed central costs to be spread across a larger volume of output, with procurement savings being achieved as a bulk purchaser. We were also told that being part of a larger group was a benefit in terms of access to technical expertise.

- *Barriers to expansion*

- 7.49 Two GB producers told us that, because current levels of capacity utilization were low, there were no barriers to producers increasing production based on existing capacity. This could be achieved by running kilns for longer, operating additional shifts and reinstating mothballed capacity. However, others disagreed, arguing that flexibility was limited because, to operate efficiently, kilns must either run at full capacity, or not at all.
- 7.50 The GB producers told us that the capital investment required to expand a plant (for example, by way of an additional kiln or additional grinding capacity) was a significant

barrier to increasing the capacity of an existing plant. In addition, the requirement for regulatory permissions, the need to secure limestone supplies, the need to remove bottlenecks from the rest of the plant and uncertainty over the cost and availability of future carbon allowances would all be relevant considerations.

Summary: barriers to entry (or expansion) through building (or expanding) a cement plant

- 7.51 We concluded that there were significant barriers to entry through building a new cement plant. The evidence we received indicated that an investment of at least £120 million, and probably closer to £200 million,²² would be required to develop a cement plant—most, if not all, of which was likely to be sunk. We noted that any such plant would need to be of a substantial scale. The smallest plant currently operational in the UK is [500,000–750,000] tonnes, which represents approximately [5–10] per cent of UK cement consumption.²³ Given these factors, coupled with weak demand in the market at present and the ability of existing producers to expand output from plants which are currently not operating at full capacity (see the next paragraph), we consider it unlikely that new entry would occur in the foreseeable future. In addition, we consider that the time required to identify and acquire a suitable site and to obtain planning permission would limit the competition faced by existing producers from new entrants in the medium term, and that planning consent for a new quarry and cement plant would be difficult to obtain in the regions where limestone occurs most readily.
- 7.52 We found that there are no major barriers to the GB cement producers expanding cement production above current levels within the current individual capacities of their existing cement plants in GB. We noted, however, that there could be considerable costs and other barriers to increasing production at an existing cement plant above its current capacity limit. These would depend on the precise circumstances at each cement plant, but could include the need for significant capital investment and appropriate planning permissions, and the status of any additional capacity under emissions regulations. The GB cement producers could also expand existing cement production above their current capacity limits by bringing mothballed capacity back into production, where they have such capacity. The cost to do so would depend on the condition of the mothballed facilities and the circumstances at the cement plant concerned.

Cement grinding mills: barriers to entry and expansion

- 7.53 An alternative model for entry into the production of cement is to build a grinding mill (where clinker from a cement kiln is ground to the fine powder with other materials—see paragraph 2.44—to make cement) and source clinker from elsewhere.
- 7.54 Although a grinding mill can be developed at a lower cost than establishing an integrated cement plant, the capital investment is still likely to be considerable. Cemex opened a grinding mill with an annual capacity of [£<] at Tilbury in 2009 at a cost of £[£<] million.²⁴ However, some of the GB producers told us that a new grinding mill could be developed more cheaply, at a capital cost of £15–£30 million.

²² We did not place as much weight on these figures as on other evidence that we used to estimate the cost of the MEA for a cement plant for the reasons set out in Appendix 7.7, paragraph 99.

²³ 2011 UK sales of cement were 8.402 Mt. Source: MPA factsheet on monthly cement sales: http://cement.mineralproducts.org/documents/Table_1_Monthly_Cement_2_Oct_12.pdf.

²⁴ www.cemex.co.uk/ac/ac_pr_20090922.asp.

- 7.55 GB producers commented that obtaining a reliable supply of clinker should not be considered a barrier to entry as it was an internationally traded commodity and could easily be imported from other sources. However, we considered that imported clinker would face a similar cost disadvantage to imported cement (see paragraphs 7.98 to 7.101). Together with the capital cost of establishing a grinding mill, we considered that this would act as a barrier to entry into the cement market by this route.
- 7.56 Hanson told us that clinker was a widely available commodity and that it estimated that free on board (FOB)²⁵ prices for imported clinker would be around [X]. It added that a clinker grinding station could be established for a [X] of the cost of clinker production. Hanson argued that, whilst the CC dismissed entry via clinker grinding by stating that it faced the same penalty costs as cement importers (without proper analysis), clinker grinding was a common route for a new entrant and the first consideration within the global cement industry. Hanson argued that this [X]. It told us that any such perceived penalty costs from importing had not deterred existing cement importers building a strong position in the GB cement markets.
- 7.57 Our arguments on entry via a stand-alone grinding station are set out in paragraphs 7.53 to 7.55. Whilst we acknowledge that the required capital expenditure is lower for a grinding station than for a cement plant (see paragraph 7.54), we considered that the investment was still likely to be considerable (£15–£30 million, although the Tilbury grinding station had cost £[X] million). We noted that there would be sound commercial reasons for locating a stand-alone grinding station on the coast, for ease of access to shipments of imported clinker. However, we considered that a grinding station located on the coast would face in the same limitations in the geographic scope of its cement sales as importers experienced in relation to the location of their import terminals (see paragraph 7.102).
- 7.58 In our view, the substantial capital expenditure requirement, the cost disadvantages faced by imported clinker and the potential for constraints on the geographic scope of sales if only one grinding station were established created significant barriers to entry via this route.
- 7.59 As with expansion of cement production at the existing GB cement plants (see paragraph 7.52), we found that there would be few barriers to the expansion of cement production at the existing GB grinding mills within their current capacity limits, provided sufficient clinker were available. However, considerable barriers could exist (depending on the precise circumstances of each grinding mill) to expanding cement production above the current capacity limit of any particular mill, including the capital cost and the need for appropriate planning permissions.

Summary: barriers to entry and expansion into GB cement production

- 7.60 We found that there were significant barriers to entry into GB cement production, whether via building a new cement plant or via establishing a new cement grinding mill. We found that there were few barriers to the expansion of cement production at the existing GB cement plants and grinding mills within their current capacity limits. However, considerable barriers could exist (depending on the precise circumstances of each cement plant or grinding mill) to expanding cement production above the current capacity limit of any particular plant or mill.

²⁵ The FOB price is the price of a product including the cost of the product and the cost of loading it on to freight vehicles at the point of sale but excluding the cost of transporting the goods from the point of sale to the buyer. We note that the FOB cost of imported cement will typically reflect the ex-works variable cost of producing cement in provenance countries, and is therefore likely to contain a margin paid to the originating cement producer. However, from the viewpoint of the (independent) cement importer, this is the price at which it purchases cement, and is therefore a purely variable cost.

7.61 High barriers to entry can be a cause of concern in relation to the both the possibility of unilateral market power and coordination (see the Guidelines, paragraphs 207 and 255). In assessing the impact of high barriers to entry on competition, the existence of few barriers to expansion for companies already in the market also needs to be taken into account.

Cement imports

7.62 In this subsection, we assess the strength of the competitive constraint from imports on GB-produced cement:

- (a) We examine the ownership, market shares and capacity of importers.
- (b) We assess the extent of any barriers to entry and expansion into the supply of cement in GB via cement imports (other than transport costs, which we considered as part of our assessment of the costs of importing cement). Further supporting evidence relating to the extent of barriers to entry and expansion via cement imports is set out in Appendix 7.4.
- (c) We consider evidence on the costs of importing cement into GB and how these compare with the variable costs of producing cement in GB.
- (d) We consider evidence on the general competitiveness of cement imports, including evidence on the amount of switching by customers between GB producers and importers of cement, the views of importers, evidence gathered from internal documents from the GB producers, and the views of cement customers on imported cement.
- (e) We consider Aggregate Industries as an importer of cement, and we explore its ability to constrain cement prices in GB.

Background on importers and market shares

7.63 Bulk, and to a smaller extent bagged, cement is imported to GB through import terminals. There are around 30 import terminals in GB, of which around 16 are operated by the Majors and the remaining 14 by independent importers.²⁶ Our focus is primarily on independent importers in this subsection, as Aggregate Industries (which imports significant quantities of cement) sells low quantities of cement externally. However, we also analysed any constraint from Aggregate Industries on GB producers (see paragraphs 7.118 to 7.121).

7.64 The evidence available to us indicated that all grey cement imported into GB currently was CEM I. We were told that there were no imports of CEM II/III into GB, but that it would be possible for importers to blend CEM I with cementitious products (eg PFA or GGBS) to produce CEM II and CEM III. In addition, some independent importers import GGBS²⁷ and/or PFA.

7.65 Appendix 7.5, Table 1, contains a list of the 11 independent importers bringing cement into GB, and their terminal locations. Appendix 7.5, Tables 2 and 3, show each independent importer's annual volume of imports of bulk cement for the period 2007 to 2011 inclusive, and imports by Aggregate Industries and the GB producers.

²⁶ We use the term 'independent importers' to refer to importers which are not a subsidiary of one of the Majors. While some of these independent importers are owned by non-GB cement producers, none has GB cement production facilities.

²⁷ We consider imports of GGBS in paragraphs 7.258–7.265.

Figures for 2012 imports are sourced from the MPA and these do not give a breakdown for each independent importer. The figures suggest that annual imports by independent importers and Aggregate Industries together total between [§] and [§] Mt and have remained largely flat in volume terms between 2007 and 2012. Monthly data on UK imports up to August 2013 is available from Eurostat. This data shows that in the first eight months of 2013, there was only a very small increase in the amount of cement imported into the UK compared with the analogous period in 2012, amounting to an increase of around 30 kt. The Eurostat data covers imports by Majors and by independents, and covers any imports into Northern Ireland too.

- 7.66 Six new cement import terminals have been opened by independent importers since 2007, as shown in Table 7.8. These new facilities have the capacity to account for only a small proportion of annual UK cement consumption, which in 2010 was 9 Mt, comprising 7.8 Mt from domestic production and 1.2 Mt from imports.²⁸

TABLE 7.8 Cement import terminals opened in the UK since 2007

Location	Owner	Date opened	Estimated capacity (tonnes per year)
Blythe	Sherburn	2007	[§]
Southampton*	Dudman Group	2007	[§]
Workington	Thomas Armstrong	2008	[§]
Lowestoft*	Dudman Group	2010	[§]
Garston*	Dudman Group	2011	[§]
[§]	Dudman Group	2012	[§]
[§]	[§]	[§]	[§]

Source: Lafarge, Dudman Group, Quinn.

*Purchased by CRH in 2013 following the entry of Dudman into administration (see paragraph 3.79).

Note: N/A = not available.

- 7.67 Dudman, which operated some of these import terminals, went into administration in January 2013. In July 2013, CRH announced that it had purchased five of Dudman's import terminals in GB (see paragraph 3.79). CRH told us that the consideration for the Dudman assets [§]. CRH also told us that it would need to spend some time rebuilding these businesses and improving their efficiency.²⁹ The acquisition of those import terminals followed CRH's acquisition earlier in 2013 of Southern Cement from CPV (see paragraph 3.70).
- 7.68 In Appendix 7.5, we use figures on sales volumes to calculate the market share held by independent importers and Aggregate Industries. We see that the independent importers' collective market share of all grey cement (ie bulk and bagged) has increased over time, from 6 per cent in 2007 to 9 per cent in 2011. Aggregate Industries' share has also grown, from 2 to 3 per cent over the same period. Appendix 7.5 also shows the independent importers' collective market share of bulk cement, which has increased from [§] per cent in 2007 to [§] per cent in 2011, alongside Aggregate Industries' share of bulk cement, which has remained at [§] per cent across the period. For 2012, we obtained data which combined imports by independent importers and Aggregate Industries; this data suggested that the share of GB importers had remained at similar levels to the previous years, both looking at all GB cement sales and looking at bulk cement sales.

²⁸ http://cement.mineralproducts.org/documents/Cement_Industry_Key_Facts_and_Figures.pdf.

²⁹ CRH response hearing summary, paragraph 6.

Capacity for imports

- 7.69 Import capacity depends both on the amount of spare production capacity in the countries of origin and on the availability (and ease of expansion) of capacity to store cement at import terminals.³⁰
- 7.70 Since 2008, demand for cement has fallen dramatically in many countries, in response to adverse macroeconomic conditions, and several countries have significant excess capacity at a national level. For example, in an internal document from 2011, Hanson mentions [REDACTED]. Cemex stated that there was significant excess capacity in some EU countries after the collapse of their construction booms (eg Spain, Portugal and the Republic of Ireland).
- 7.71 In addition to demand for cement dropping and several countries developing significant excess capacity at national level, the rules for how carbon allowances are allocated under the ETS have recently changed (see paragraphs 2.59 and 2.60, and Appendix 2.2). The GB cement producers told us that new rules would create an incentive for overseas producers not to reduce output in response to declining domestic demand, and that the resulting excess volumes would to some extent be exported to GB. We analysed whether the new rules would create an incentive to maintain output despite reduced demand. We found that the new rules were likely to provide such an incentive, but that this was not sufficient to conclude that there would be a material change in the extent of GB cement imports. In addition to there being an incentive to maintain output, a material change to GB cement imports would necessitate significant over-production, with a sufficient fraction of the excess production being exported to GB.
- 7.72 In Appendix 7.5 we also estimate the additional volume of cement that could be produced in the Republic of Ireland and Northern Ireland due to changes in the rules for how carbon allowances are allocated under the ETS.³¹ This volume is estimated to be approximately 270 kt.^{32,33} While we believe it likely that any additional volume produced would be exported, we note that not all Irish cement exports in recent years have been to GB. In 2012 around half of cement exports from the Republic of Ireland were shipped to non-GB markets; the figure for the first eight months of 2013 was slightly under 40 per cent.³⁴ We did not carry out similar analyses for other countries mentioned by parties as candidates for increasing their cement exports to GB (such as Spain and Greece). However, we note that the UK has accounted for a significantly lower share of those countries' cement exports than is the case for Ireland. In 2012, the UK accounted for 10 per cent of Spanish cement exports, and for 4 per cent of Greek exports (see paragraphs 176 and 177, Appendix 7.5).
- 7.73 Cemex told us that [REDACTED].³⁵
- 7.74 We did not think it was possible to draw wider conclusions about the relative competitiveness of imported cement as against GB cement production from the evidence

³⁰ We note that it is also possible to import some cement via ferry, using trucks.

³¹ We focused on the island of Ireland as data was available and we considered Ireland to be a particularly strong candidate for exporting additional cement to GB due to its geographic proximity to GB.

³² Our analysis is based on an assumed carbon allocation price of £8. This is considerably more than the current price of carbon, around £4.50 per allowance, and so our analysis overstates the case for expansion.

³³ In its [response to our provisional findings](#), Lafarge Tarmac estimated that [REDACTED] Mt of cement had to be exported from Ireland to retain carbon credits (see paragraph 3, third bullet point of Lafarge Tarmac's response). That estimate is seemingly based on a calculation that draws on the total cement capacity in Ireland (exceeding [REDACTED] Mt) and total Irish domestic demand of [REDACTED] Mt, and does not appear to take account of the current production levels and relevant HAL thresholds of individual plant as we have sought to do. We also note that our estimate of 270 kt relates to output (and exports) over and above the 2012 level. Lafarge Tarmac's estimate of [REDACTED] Mt relates to exports in absolute terms.

³⁴ See Appendix 7.5, paragraph 176.

³⁵ [Cemex response hearing summary](#), paragraphs 11–13.

that [X]. The financial incentive will also depend on the price of carbon allowances. We also note, as observed above in paragraph 7.74, that the UK accounts for a significantly lower share of cement exports from either Spain or Greece than for Ireland. We consider it likely that these countries will continue to export a lower fraction of any additional cement production to GB than is the case for Irish producers. Further, we noted (as set out in Appendix 7.5) that even if all the additional output from cement works in the island of Ireland were to be exported to GB (which is a considerable overestimate of the fraction exported to GB from the island of Ireland in recent years), this would represent no more than about 6 per cent of GB cement consumption (using 2011 figures). Also, our analysis in Appendix 7.5 was based on a carbon allowance price of £8, considerably more than the current price of carbon allowances (around £4.50 per allowance or lower), and so our analysis overstates the case for expansion. In any event, regardless of the origin of imported cement, our analysis (see paragraphs 7.98 to 7.101) shows that GB producers have the flexibility to set prices considerably lower than cement importers.

- 7.75 The evidence we received from importers (see Appendix 7.5) confirmed that they had spare capacity for importing cement at their terminals.

Cement imports: barriers to entry and expansion

- 7.76 We considered the evidence relating to the following possible barriers to entering the UK cement market using imported cement (or expanding existing cement import operations, as relevant):³⁶

- access to an import terminal;
- source of supply;
- upfront investment required;
- vertical integration of the GB producers;
- access to shipping;
- incumbent reaction; and
- customer reaction.

- 7.77 The GB producers considered that barriers to entry for importing cement (and barriers to expansion of existing cement import operations) were low. They told us that access to an import terminal could easily be secured. They also said that there were numerous ports and wharves that were suitable for importing cement and that it was simple to convert existing storage facilities (such as grain silos) for cement. In addition, it was suggested that cement could be imported by road tankers and trucks, without using a specialist import terminal.

- 7.78 We received more mixed evidence from other GB cement suppliers. Some told us that there were only a limited number of ports suitable for import terminals, particularly for larger ships requiring deepwater facilities, and suitable facilities were unlikely to become available to new entrants. However, one new entrant told us that it had had no difficulty finding a port.

³⁶ Transport costs may also be a barrier to entry—these are considered in paragraphs 7.91–7.102.

- 7.79 The GB producers told us that cement was readily available for import owing to international overcapacity, particularly from Spain and the Republic of Ireland. However, some cement importers disagreed, and said that the main barrier to entry was securing a reliable or competitively-priced source of supply. We examine the evidence on availability of cement for import in paragraphs 7.63 to 7.65 and 7.70 to 7.72.
- 7.80 In their responses to our provisional findings, Lafarge Tarmac, Cemex and Hanson noted that the acquisitions by CRH of Southern Cement and of Dudman's import terminals improved CRH's ability to import cement to GB on a large scale and, coupled with the facilities CRH already operated, had given CRH national coverage.³⁷
- 7.81 The GB producers estimated that the cost of setting up a cement import terminal could be between £[redacted] and £1 million. We were told that the capital cost of establishing a new deepwater terminal would be considerably higher.
- 7.82 One concern raised with us was that the market available to independent cement suppliers had reduced over the last 20 years because the GB cement producers had integrated vertically into RMX production and now supplied their own RMX plants with their own cement. We were told that this had made the cement market less attractive to new entrants because it reduced the size of the market addressable by independent cement suppliers. We note that in 2011, approximately 41 per cent of all bulk cement purchased in the UK was purchased by the GB producers (either from their own plants or from the other GB producers); approximately [redacted] per cent was purchased by Aggregate Industries and the balance (about half of all bulk cement purchased in the UK) was purchased by non-Majors. These figures relate to all independent cement demand, not just demand by RMX producers.
- 7.83 Hanson told us that shipping capacity was readily available, and we received no evidence to the contrary.
- 7.84 A cement importer told us that the possible reaction by incumbent suppliers (which might include impugning the entrant's reputation and lowering prices) was a barrier to entry. We assess the evidence on the GB producers' behaviour in response to cement importers in paragraph 7.108.
- 7.85 Titan told us that it thought a new entrant might face reluctance from customers to change to a new supplier; however, a GB producer said that it had experienced customers switching away to importers and that it saw no reason to believe that customers would not be prepared to switch to a new entrant supplier given their willingness to switch to importers generally. We assess the evidence on customers switching between GB cement producers and cement importers in paragraphs 7.110 to 7.117.
- 7.86 We found that the cost of establishing a new cement-importing operation would be likely to be significantly lower than the costs of a new cement plant or grinding mill. However, in our view, the extent of vertical integration by the GB producers into downstream operations (including RMX) raises the barriers to entry for a new cement import operation (and limits the ability of existing cement importers to expand), by reducing the number of potential customers for their cement.

³⁷ [Lafarge Tarmac response to provisional findings](#), paragraph 170; [Cemex response to provisional findings](#), paragraph 12.12; [Hanson response to provisional findings](#), paragraph 21.8.2.

- 7.87 In its response to our provisional findings, Cemex told us that it considered that cement sales to independents still represented a large market for importers to compete for, that the fact that the majority of customers multisourced for a given job site increased the likelihood of an importer attracting orders³⁸ and that there was no evidence that an increase in the size of the addressable market would result in more cement producers entering the market or existing cement importers expanding their operations.³⁹ Lafarge Tarmac and Hanson raised a similar point.⁴⁰ Hanson told us that 55 per cent of RMX plants were not owned by the five Majors so that vertical integration could not be a binding constraint on importers. Hanson noted that in the Airtours decision, the Court of First Instance held that an addressable market which was 40 per cent of the overall market was sufficient.⁴¹ Cemex also told us that the CC had produced no analysis in support of the argument that vertical integration reduced the addressable market around a particular import terminal. Cemex further noted that the CC had accepted that cement was a national market, that importers sold their cement within a large radius of their import terminals, that CRH, an importer, was able to serve all of GB and that independent demand was growing.
- 7.88 We found that most importers sell their cement within 100 miles of the relevant import terminal (see paragraph 7.102). Whilst we consider that cement is a national market, distribution costs are an important element contributing to a supplier's costs of supplying a particular customer. It is clear to us that the existence of vertically integrated RMX plants within the 100-mile radius of the terminal used by an importer reduces the geographic concentration of accessible demand to that importer, compared with a setting where those plants are operated independently. We consider that this weakens the business case for an importer to operate in that region, though it does not necessarily undermine it fatally.
- 7.89 There are also other barriers to entry in terms of the substantial short-run cost advantages of the GB producers over cement importers (see paragraphs 7.98 to 7.101) and the reaction of the GB producers to cement importers (see paragraph 7.108).
- 7.90 There appear to be few barriers to the expansion of cement imports within the capacity limits of the existing cement import terminals (see paragraphs 7.69 to 7.75).⁴² Expanding the volume of cement imports at any particular terminal beyond that terminal's current capacity would require some capital investment (although this would be likely to be much less significant than in the case of expansion of a cement plant or grinding mill) and would depend on the availability of space at suitable ports. However, all such additional cement brought into GB by an existing importer would face the same disadvantages as cement imported by a new entrant (see paragraph 7.86).

Competitiveness of imports and costs of imported cement

- 7.91 The ability of imports to compete successfully with GB-produced cement depends mainly on the price at which imports of cement can be sold profitably in GB. This in turn depends primarily on the costs of producing cement in the country of origin, the exchange rate, the cost of transporting cement to, and storing the cement in, GB

³⁸ However, our analysis as set out in Appendix 7.9 showed that the majority of customers did not simultaneously multisource at a given job site. Sourcing from different suppliers over time is not the same as simultaneous multisourcing.

³⁹ [Cemex response to provisional findings](#), paragraphs 13.6 & 13.7.

⁴⁰ [Lafarge Tarmac response to provisional findings](#), paragraphs 133 & 134; [Hanson response to provisional findings](#), paragraphs 6.5.17a) & 10.9.2.

⁴¹ [Hanson response to provisional findings](#), paragraphs 6.5.17 a) & 10.9.2.

⁴² However, in the case of Aggregate Industries, it told us that [§].

import terminals, any other import costs (such as import levies) to the extent they apply, and the additional costs of transporting the cement to customers within GB.

7.92 The fact that there are currently imports into GB shows that, at the current level of GB cement prices, it is possible to derive positive margins from importing cement into GB.⁴³ However, the extent of the constraint imposed by imports on GB prices will depend also on whether importers would be able to expand sales significantly and profitably by undercutting the GB producers of cement. This will depend, among other things, on the relative costs of importing cement into GB compared with the costs of producing cement in GB. If importers are able to expand sales in GB at similar, or lower, costs than GB producers, they may have an incentive to significantly undercut GB producers in order to gain sizeable share of the GB market. However, if importers operate at higher costs than GB producers, they may not have the capability to undercut GB prices by much, or at all. If importers face significantly higher average variable costs to serve GB customers, it may therefore be in their best interests to remain fringe players and set import prices in line with GB producer prices.

7.93 In the following paragraphs, we assess:

- (a) evidence on various elements of cost that will affect the final price of imported cement;
- (b) evidence on the catchment area for imports (ie the distance from import terminals over which imports appear to be price competitive against GB-produced cement); and
- (c) evidence on the competitiveness of imports more generally, including customer views on the attractiveness of imports and evidence of customers switching to imports, and views from importers on their ability to compete with GB-produced cement.

- *Costs of imported cement*

7.94 In the following paragraphs, we summarize the evidence we have obtained regarding the different elements of the variable costs of importing cement, and compare these costs with the variable cost of producing cement in GB. We first review the evidence we received on the costs of producing cement in provenance countries. We next review the evidence on the costs of shipment of imports to GB. We then review evidence on the total costs of producing and shipping imports to an import terminal, and compare this with evidence on the ex-works costs of producing cement in GB.⁴⁴

- *Price of cement internationally*

7.95 We obtained data from independent importers on the average costs to them of sourcing cement in the provenance countries before shipment, ie free on board (FOB) costs. We also obtained data from the GB cement producers on the average

⁴³ Hanson told us that the presence of importers in the GB market had grown from [redacted] in the 1980s to some [redacted] per cent today.

⁴⁴ This analysis does not take into account the costs of transporting cement from import terminals to customers in GB, or from GB cement plants to customers. Import terminals may be located close to centres of cement demand, such that delivery costs from import terminal to end-customers may be low. This is not always the case of cement plants, although we note that GB producers tend to have depots close to demand centres, and that these depots are connected to cement plants via rail links, which makes transport of GB produced cement to such rail-linked depots relatively cheap. Any further transport costs from depots to the end-customer are then likely to be comparable to those faced by importers.

FOB costs to them of sourcing cement produced in other countries.⁴⁵ We noted that, in addition to importing cement and possessing knowledge of import costs directly, the GB producers (excluding Tarmac) were part of global groups that had international cement trading operations through which they would have good information about the FOB prices of cement in other countries (as well as shipping costs). The various estimates we obtained for the cost of sourcing cement from outside GB are in Appendix 7.5.

7.96 We found that the costs of imported cement were of the order of £[redacted] to £[redacted] per tonne on average before shipping to GB import terminals and before delivery to GB customers. Costs of imported cement have increased over time, from an average of £[redacted] (all imports) or £[redacted] (independent importers) per tonne in 2007.

- *Shipping costs*

7.97 Shipping is a significant additional cost for importers compared with GB producers of cement. Appendix 7.5 contains estimates by the GB producers and cement importers of the cost of shipping cement to GB terminals from various different locations. These estimates suggest that, on a simple average, importers incur a freight cost of £[redacted] per tonne overall, although this varies by country of origin. The average is the same whether only independent importers are considered, or whether all imports are included. There have been fluctuations in the cost of freight over time, from a low of £[redacted] (£[redacted]) in the case of all imports (independent importers) in 2007 to a high of £[redacted] (£[redacted]) in 2008, before falling to £[redacted] in 2011.

- *Overall costs of imported cement*

7.98 We found that the overall average variable costs of importing cement were of the order of £[redacted] to £[redacted] per tonne to GB terminals in 2011 and that the average variable ex-works costs for GB-produced cement were of the order of £[redacted] to £[redacted] per tonne (see Appendix 7.5) for the same year.⁴⁶ This suggests that GB producers have the flexibility to set prices considerably lower than cement importers while still making a contribution to fixed costs in the short run.

7.99 We noted that GB producers had higher fixed costs than the importers for which we had detailed data, and therefore long-run marginal costs of production for the GB producers and the importers might not be dissimilar. However, the relevant cost concept for this analysis is short-run average variable costs, as these costs will determine the ability of the GB producers to price importers out of the market.

7.100 We also analysed the cost structures of cement importers using profit and loss data from four independent importers (see Appendix 6.6). We analysed whether the independent cement importers had any cost disadvantage when competing against the GB producers' cement divisions by comparing each cement importer's unit total costs (as measured by total cost per tonne sold) against the average ex-works market price of cement produced in GB (as measured by unit net revenues from

⁴⁵ Lafarge provided costs on a 'cost, insurance and freight' (CIF) basis, which we understand to be the cost of cement landed in GB, including shipping costs, insurance and any other handling charges. We have calculated FOB costs for Lafarge by subtracting average shipping costs from the CIF costs. However, this may overestimate the FOB costs somewhat, as we were unable to subtract insurance costs, and any other costs which are included in the CIF estimate. Where costs were provided in euros, we have converted these to pounds sterling using average exchange rates for the year. Where more than one cost was provided for a given country of origin and year (because the port of entry into GB differed), we have calculated a weighted average cost (using volumes) for the country of origin and year.

⁴⁶ We have defined variable costs as those costs that necessarily vary in line with small changes in production volumes at an active production site, and to a lesser extent, sales volumes.

external sales of the Majors' cement divisions). We found that for the cement importers we analysed, unit total costs were generally higher than the average ex-works price of domestically-produced cement. Therefore, even before taking into account a cement importer's own required margin, the cement importer had a cost disadvantage in competing against the price of domestically-produced cement.

7.101 Cement importers' evidence to us indicated that they were aware of their cost disadvantages compared with the GB producers. In our view (which was confirmed by several cement importers—see paragraph 7.105), cement importers were likely to be cautious about significantly undercutting the prices of the GB producers, as cement importers were able to anticipate the ability of the GB producers to react by pricing a particular importer out of the market more generally. We found that the cement importers therefore had incentives to price their cement just below the price of GB-produced cement.

- *Geographic scope of imported cement*

7.102 We also considered evidence on the geographic scope of imported cement (see Appendix 7.5). There was evidence that the majority of individual importers sold most of their cement within about 100 miles or less of their terminals, and CRH told us that it would always be difficult to supply central England effectively with cement from coastal terminals.⁴⁷ However, we did not think that this limited the geographic scope of imported cement materially when cement importers were considered collectively, given the number and distribution of cement import terminals around GB, and the relative accessibility of all parts of GB to the coast.

Evidence from importers, GB producers and customers on the competitiveness of imports

7.103 In the following paragraphs, we summarize evidence on the competitiveness of imports from:

- (a) importers;
- (b) the GB producers; and
- (c) customers.

7.104 Details of this evidence are in Appendix 7.5.

7.105 Importers made the following main points:

- (a) Imported cement was fully substitutable with GB-produced cement. Any concerns expressed by customers about quality or security of supply were more perceived than real.
- (b) Importers were generally able to compete with GB producers, particularly when the customer was close to an import terminal. The low prices of the GB producers could be a problem, and it was, for example, easier to compete in areas that were distant from the GB producers' plants.
- (c) GB producers' costs were lower than those of the importers, and the GB producers had spare capacity. Therefore the importers were cautious in setting their

⁴⁷ CRH response hearing summary, paragraph 7.

prices as they were vulnerable to the GB producers responding by dropping their prices for key customers.

(d) Importers had some vulnerability to exchange rate fluctuations.

7.106 Our analysis of the margins of the independent importers for whom we had data (see Appendix 6.6) showed that their margins were volatile and had declined over time, notwithstanding stable or increasing price trends. The independent importers' EBITDA margins were significantly lower than the GB producers' EBITDA margins (although we noted that the GB producers had greater capital intensity and would have higher target returns on capital employed (ROCEs) than the importers).

7.107 We noted that, as set out in paragraph 3.71, Dudman Group—the largest importer of cement into GB without its own cement production capability—went into administration in mid-January 2013 and that five of its import terminals were subsequently purchased by CRH.

7.108 The evidence from GB producers (as set out in Appendix 7.5 and as described in paragraphs 8.101 and 8.190 to 8.193) indicated that:

(a) GB producers monitored imports in some detail.

(b) GB producers regarded imported cement to be substitutable—and highly competitive—with GB-produced cement.

(c) GB producers were concerned about the growth in imports and the effects of the ETS (see paragraphs 7.71 and 7.72, and 11.28 to 11.30).

(d) On occasion, GB producers acknowledged the logistics disadvantages faced by imported cement.

(e) There were cases of strategic behaviour by the GB producers aimed at containing the threat from cement imports (including consideration, and in some cases taking, of specific steps: to restrict the supply of cement to importers; to acquire import terminals and/or importers; to leverage contacts with importers in other markets; and to target lower-priced cement selectively at customers of cement importers).

7.109 The evidence from cement customers on imported cement included that:

(a) In general, customers felt that they were able to obtain what they considered to be competitive quotes from cement importers (although one customer noted that it had found that the cement importers were unable to match the GB producers' prices, in part because of the location of that customer's operations).

(b) There were some perceptions of possible quality concerns with imported cement.

(c) There were few concerns over security of supply, although one customer said that it had a preference for domestic cement over imported cement in part due to security of supply.

(d) Customers were able to use quotes from cement importers and/or the threat of importing their own cement in their negotiations with the GB producers.

(e) Customers whose threats to import their own cement were particularly credible were able to gain unusually favourable terms for GB cement supply.

Switching between GB-produced cement and imported cement

- 7.110 We examined the extent of customer switching between GB producers and independent importers. We analysed data provided by GB producers and some importers, and then reviewed evidence of the GB producers' reactions to customer switching to importers. Our analysis is in Appendix 7.5.
- 7.111 We found that there was some switching between GB producers and importers, but that this tended to be low as a proportion of each GB producer's annual sales. The GB cement producers told us that data on switching to importers might underestimate the competitive threat from importers, because of the constraints from threats to switch. They told us that they often had to reduce prices to customers (or increase prices less than forecast) in reaction to threats to switch to importers, and provided examples of this.⁴⁸ On the other hand, importers told us that switching from GB producers to importers tended to be temporary, and that GB producers tended to attempt to win back lost business by reducing prices. We note, however, that importers have managed to grow their share of the market. Including Aggregate Industries, importers' collective share of sales in GB rose from 8.5 per cent in 2007 to 12.5 per cent in 2012 (see Appendix 7.5, Table 3).
- 7.112 Lafarge told us that attempting to win back lost business by lowering prices was a normal part of the competitive process, and that while Lafarge might have attempted to win back lost business, it had not always been successful. Cemex pointed to much of the CC's analysis of switching as evidence in itself of a genuine constraint imposed by importers on GB producers.⁴⁹ In particular, Cemex noted that importers' average monthly wins appeared to be higher than their monthly losses and that the opposite was true of the Top 3 cement producers; that importers appeared to be winning more independent customers than the Majors (both in terms of volumes won and as a proportion of total sales volume); that wins by the Top 3 had fallen to relatively low levels in 2011; and that post-2009 the majority of cement customers that switched to importers benefited from price reductions.⁵⁰
- 7.113 We acknowledge that the switching pattern observed, as analysed in Appendix 7.9 and noted by Cemex, is consistent with the growth in the importers' market share. However, (a) because there is price discrimination in the supply of cement (see paragraph 7.181), GB producers offering customers who have switched or who threatened to switch to importers' lower prices to win them back (or stop them switching) does not generate downwards pressure on prices for all of the GB producers' customers, and (b) if GB producers have more flexibility on prices than the importers due to marginal cost advantages (as our analysis suggests) and the GB producers attempt to win back lost business by reducing prices, then it will be difficult for a particular importer to retain customers or grow its businesses.
- 7.114 In its response to our provisional findings, Cemex disagreed with this analysis. It told us that [redacted].^{51,52} Cemex also provided information on recent losses and wins from importers: in the five months to May 2013, Cemex lost [redacted] kt of volumes to importers, and won [redacted] kt.⁵³
- 7.115 Further, Cemex submitted that the CC had acknowledged that importers were able to deliver UK-wide and that given that, in Cemex's view, there were no customers at the

⁴⁸ See Appendix 7.5.

⁴⁹ Cemex response to provisional findings, paragraph 15.2.

⁵⁰ *ibid*, paragraphs 15.3–15.7.

⁵¹ *ibid*, paragraph 15.18.

⁵² *ibid*, paragraph 15.14.

⁵³ *ibid*, Tables 3 & 4.

margins that Cemex could serve at lower prices, domestic producers would have to discount all their prices in order to price an importer out of the market.⁵⁴ Cemex drew attention to the difficulties surrounding the uncertainty of identifying any 'captive' customers in any effort selectively to reduce prices.⁵⁵ In this context, Cemex submitted that in the cement industry, with relatively high gross margins due to high fixed costs, the error rate to render attempted price discrimination unprofitable was not high.⁵⁶

7.116 We disagree with some of the elements of Cemex's argument. We note that in each of the years from 2009 to 2011, the share of Cemex's sales to independent buyers that was defended against importers was less than [redacted] per cent (see Appendix 7.5, paragraph 22) and was around [redacted] per cent of external sales in the period from January 2012 to May 2013.⁵⁷ Further, we note that [redacted] kt of the volume defended in the period from January 2012 to May 2013—around a [redacted] of the total volumes defended over the period—involved defending a customer against an importer and one or more of the Majors. It is not clear to us how pivotal the role of the importers, rather than of the Majors, was in the defence Cemex made in those instances. With regard to the volumes that Cemex has won from and lost to importers in the five months to May 2013, we note that these represent a small share of the Cemex's sales over a five-month period: less than [redacted] per cent of total sales, or around [redacted] per cent of its total external sales.⁵⁸ In addition, the fact that Cemex's [redacted] during this period were [redacted] Cemex's [redacted] was entirely the result of the [redacted] that was much larger than all the others in January 2013.

7.117 In relation to the ability to identify customers for whom there is a credible threat of switching to importers, we noted the following. First, as set out in paragraph 7.102, most importers deliver cement within 100 miles of their terminals, although importers collectively cover GB. Therefore, to target a particular importer, a GB producer would not need to reduce its prices for all its customers across GB. Second, given the extent of price dispersion across customers, we consider that prices can be reduced for some customers without prices having to be reduced for all customers (ie there is price discrimination). The evidence submitted by Cemex on defended sales points to Cemex price discriminating: reducing its price selectively in the face of competition from importers for those customers at particular risk of being lost. Third, from the evidence in Cemex's response to our provisional findings,⁵⁹ Cemex has good visibility of which customers in particular it has had to defend against importers, and the particular importers concerned. Given that (a) there are no long-term supply contracts, (b) prices can be changed quickly in response to customer actions and (c) customers are very price sensitive, a GB cement producer is likely to be able to determine if a threat to switch is real, and any customers lost can be won back quickly.

Aggregate Industries

7.118 Aggregate Industries has four import terminals in GB, which are located in the North-West, South-East, South-West and Scotland. Aggregate Industries did not provide figures for the capacities of its import terminals, stating that it could not 'provide any

⁵⁴ *ibid*, paragraph 15.23.

⁵⁵ *ibid*, paragraphs 15.22 & 15.23.

⁵⁶ *ibid*, Annex 6.

⁵⁷ Estimates based on Cemex's volume of sales in 2012 (Appendix 7.1, Table 1), extrapolated for a 17-month period, and on the split between external and internal sales reported for 2011 (Appendix 2.3, Table 1).

⁵⁸ Estimates based on Cemex's volume of sales in 2012 (Appendix 7.1, Table 1), apportioned for a five-month period, and on the split between external and internal sales reported for 2011 (Appendix 2.3, Table 1).

⁵⁹ [Cemex response to provisional findings](#), Table 5.

meaningful estimate of the limits on the amount of cement that Aggregate Industries can import through each of its four import terminals'.⁶⁰

- 7.119 Aggregate Industries told us that it imported cement into GB from Holcim's [REDACTED] plant in Germany. It imported around [REDACTED] tonnes of cement in 2011, almost exclusively for internal use ([REDACTED] were for internal use and [REDACTED] tonnes were sold externally, [REDACTED]). In addition, Aggregate Industries purchased around [REDACTED] tonnes of cement in 2011 predominantly from GB producers [REDACTED].
- 7.120 Further details of Aggregate Industries' purchases of cement are in Appendix 7.5, including maps showing the location of Aggregate Industries' cement-purchasing plants, their annual value of cement purchases and the origin of their cement purchases. The maps show that Aggregate Industries tends to purchase cement internally (ie use imported cement from its sister company Holcim Germany) [REDACTED].
- 7.121 We considered that Aggregate Industries' actual imports, as well as the threat of further imports, could be used as leverage by Aggregate Industries in price negotiations with the GB producers, but were unlikely to have an impact on the prices paid for cement by independent customers, as Aggregate Industries sold very low volumes of cement externally in GB.

Summary: cement imports

- 7.122 We assessed the strength of the competitive constraint from imported cement on GB-produced cement. We noted that, independent importers—ie excluding Aggregate Industries—had experienced some growth in their collective share between 2007 and 2011 (from 6 per cent in 2007 to 9 per cent in 2011) and that their collective share of GB cement sales remains small and the total volumes imported have not increased over that period.^{61, 62} We also note that all of the increase in their collective share took place in 2008 and 2009. Since then, independent importers' collective share has remained stable. When we include Aggregate Industries together with the other importers, we note that the share of GB sales rose from 8.5 per cent in 2007 to 12.5 per cent in 2012, with much of that growth happening between 2008 and 2009, since when the share has remained fairly flat.
- 7.123 We found that, although there was evidence that the GB producers regarded imported cement as a competitive threat, the strength of the competitive constraint from imported cement was limited because:
- (a) The GB producers had a substantial short-run cost advantage over cement importers in competing for customers at the margins.
 - (b) The higher costs faced by cement importers created incentives for them to price their cement just below the price of GB-produced cement.

⁶⁰ However, as noted in the footnote to paragraph 7.90, Aggregate Industries told us that [REDACTED].

⁶¹ In its [response to provisional findings](#) (paragraph 10.10.5), Hanson submitted that importers' share of sales today was over 14 per cent, although it did not source this figure, and that importers' share of sales was higher when calculated with reference to cement sales to non-Majors, and of bulk CEM 1 to non-Majors. Hanson also submitted that there were some high regional market shares of imports (paragraph 10.11 of its response to provisional findings). Cemex told us in its [response to provisional findings](#) (paragraph 12.2) that the independent importers accounted for 18 per cent of the addressable market for independent customers in 2011, and that this collective share could not be characterized as low. In terms of assessing the competitive constraint of importers on GB-produced cement and GB cement prices, we considered that the overall share of importers in GB was the relevant measure, rather than their share for a specific region or category of customer. This was also the relevant metric in order to assess the ability of importers to undermine any coordination in the GB cement markets.

⁶² For 2012, we obtained data on imported cement that aggregated independent importers and Aggregate Industries. This suggested that imports remained stable compared with 2010/11 levels.

- (c) The GB producers considered, and in some cases took, specific steps to undermine the viability of imported cement, such as applying pressure to restrict cement supplies to independent importers, purchasing of import terminals and/or importers; leveraging of contacts with importers in other markets; and targeting lower-priced cement selectively at customers of cement importers.⁶³

7.124 The limited constraint from imported cement is of concern both in relation to unilateral market power (in that it may reduce a source of additional rivalry to any company seeking to exercise such market power) and coordination (in that it may contribute to the external stability of coordination—see the Guidelines, paragraph 255).

GGBS and PFA

7.125 In considering the structure of the GB cement markets, we noted that GGBS and PFA are both inputs into the production of blended cements and partial substitutes for CEM I in the production of RMX and other downstream uses of cement. Also, in the case of GGBS, the only two firms involved in the supply chain for GB-produced GGBS are also GB cement producers, namely Hanson and Tarmac (now Lafarge Tarmac).

7.126 In paragraphs 7.251 to 7.298, we set out the evidence available to us and the analysis we carried out as part of our assessment of the role played by GGBS and PFA in the GB cement markets and competition in the GB GGBS market.

Other aspects of cement market structure

7.127 There are a number of other structural factors that may facilitate the sharing of, or access to, information in the GB cement markets, including:

- (a) As noted in paragraph 2.79, the GB producers are vertically integrated and their downstream operations (mainly RMX) purchase cement from other GB producers. This means that each GB producer will have up-to-date information on the prices it pays to, and announced price increases sought by, at least the other GB producers from which it purchases cement. In their capacity as cement customers, the GB producers may also occasionally (or regularly) seek quotes from those cement producers from which they do not currently purchase cement, and may therefore have some information on the prices offered to them by those suppliers as well. We acknowledge that, as prices for cement are agreed following confidential bilateral negotiations, the prices at which such cross-sales are made do not provide precise information on prices paid by other cement customers.
- (b) The GB producers are engaged in JVs with one another (see Appendix 3.1), mainly in relation to their aggregates, RMX and asphalt businesses, though there are also some JVs relating to cement and cementitious products. The presence of JVs between cement producers will increase the amount of interaction between them and provide another forum for communication between them, including repeated opportunities for informal senior level business contacts. Such

⁶³ Hanson argued in paragraphs 10.31 & 10.32 of its [response to provisional findings](#) that GB producers would only need to 'contain importers' activities' if importers were a real competitive constraint. Hanson further argued that the evidence did not support the CC's claimed existence of strategic behaviour and instead demonstrated the substantial competitive challenge from importers. We acknowledge (see paragraph 7.108) that GB producers regard imported cement as highly competitive with domestic cement. Our view as set out in this paragraph is that the competitive constraint from imported cement is limited (not that there is no competitive constraint). Examples of the internal documentary evidence of strategic steps against importers are referred to in paragraphs 8.101 & 8.192.

interactions have the potential to strengthen their relationships and increase their awareness of their mutual interdependence.⁶⁴

- (c) The internal documents that we reviewed as part of our investigation (see paragraphs 8.71 and 8.115) showed that, in the context of cross-sales to one another, and through participation in common business forums (eg CEMBUREAU, the European Cement Association), there are opportunities for senior level business contacts between the GB producers—and these opportunities are on occasion taken—which have the potential to facilitate transparency in the cement market.⁶⁵

7.128 In the context of assessing transparency in the market, we asked the GB producers what information they held on their competitors. They told us that they were all members of common industry associations, such as the MPA, and, as such, they each provided data on production and sales to the MPA on a monthly basis. The MPA then publishes data on its members' production and sales, including aggregated monthly cement sales and quarterly cementitious and cement sales by channel and region. The GB producers therefore have access to monthly data (one month in arrears) on a significant proportion of cement demand, from which they can calculate their own shares of production and sales on a monthly basis.⁶⁶

7.129 The GB producers also told us about other sources of information regarding their competitors that were available to them including (but not limited to) information collected by their sales forces, information from published EU ETS data and other public sources, and third party information (particularly in relation to cement imports)—see Appendix 7.3.

7.130 Assessing the extent to which firms' incentives are aligned—through consideration of symmetries between firms—is a factor in assessing the possibility of coordination in a market (see the Guidelines, paragraph 252). We found that there were some symmetries between the GB producers in terms of their cost structures and profit drivers:

- (a) Our analysis of the cost structures of the GB producers is set out in Appendix 6.5. We found that there was a large degree of symmetry in the unit variable costs of the cement divisions of the GB producers. In FY11, for all of the cement-producing Majors, variable costs per tonne sold ranged from £[redacted] to £[redacted], or between [redacted] and [redacted] per cent of total costs.⁶⁷ Among the cement producers, [redacted] benefited from the lowest unit variable cost at £[redacted]. Excluding [redacted], the range for the unit variable cost of the remaining three cement producers tightens: from £[redacted] ([redacted]) to £[redacted] ([redacted]).

- (b) Our analysis of the GB producers' consolidated profits (see Appendix 6.5) showed that Cemex, Hanson and Lafarge had similar profit drivers, in the sense

⁶⁴ Cemex told us in its [response to provisional findings](#) (paragraph 6.14) that the number of JVs in which it participated had reduced dramatically over recent years, and that the CC had not presented any evidence of JVs being used to increase transparency in practice. We consider that participation in JVs is likely to provide opportunities for informal senior level business contacts; by their nature these contacts are unlikely to be documented. Even if Cemex's participation in JVs has reduced, its ongoing participation in trade associations and industry forums is likely to provide similar opportunities for informal senior level business contacts.

⁶⁵ Our concern is not that these forums in themselves are aimed at facilitating transparency or anti-competitive activity. Indeed we have seen evidence that some of these forums are highly conscious of the need to avoid such activity, and take steps intended to ensure that it does not take place under the formal auspices of those organizations. Our concern is that, in the margins of such industry gatherings, there are repeated opportunities for informal senior level business contacts.

⁶⁶ We also noted that BIS publishes monthly clinker production and cement sales data on its website, as well as an annual price index for cement sales in GB. Further, Lafarge and Cemex (but not Hanson or Tarmac) are part of the UK register for the European Eco-Management and Audit Scheme. As part of this scheme, participants produce a sustainability report, which includes details of cement production by plant and cement sales by depot.

⁶⁷ [redacted]

that their respective cement divisions made the largest contribution to their consolidated profits (ie the combined EBITDA of their aggregates, cement and RMX divisions), whilst Tarmac's cement division contributed only [X] per cent to its consolidated profits.⁶⁸

Cement: market outcomes

7.131 In light of what the Guidelines say on market outcomes that the CC may take into account in its AEC assessment (see paragraph 4.13), in this subsection we look at the following outcomes in the bulk and bagged cement markets in GB to assess the extent of any competition problems (for example, arising from unilateral market power or coordination):

- (a) profitability;
- (b) margins;
- (c) pricing and price dispersion;
- (d) customer switching; and
- (e) month-by-month changes in shares of sales.

Profitability

7.132 We applied the profitability framework described in Appendix 4.1 to assess the profitability of the GB producers' cement operations. As set out in Appendix 4.2, we used a figure of 10 per cent as our midpoint estimate of the Majors' weighted average cost of capital. Further information on our methodology⁶⁹ and the detailed results of our assessment are in Appendix 7.7. For the reasons set out in paragraph 4.14, we consider that it is appropriate to assess the profitability of the GB producers' cement operations on a stand-alone basis.

Basis of preparation

7.133 We assess the GB producers' profitability by comparing their ROCE with their cost of capital. In addition to calculating ROCEs using the GB producers' normal basis of preparation, HCA, we also sought to estimate the GB producers' ROCE on an economic, CCA, basis. Here the value placed on the capital employed within cement operations reflected our best estimate of its current value to the business, rather than its historical cost. We considered that the two key issues in relation to the preparation of the cement profitability analysis were:

- (a) the value to be placed on existing cement plant and machinery; and
- (b) the appropriate accounting for the impact of the unexpected slump in demand that emerged in 2008 and persisted to the end of the period reviewed (financial years 2007 to 2012 inclusive), which impaired the value of these assets.

⁶⁸ Hanson argued that this contribution was (a) dependent upon the revenues generated from carbon sales (which Hanson told us was inconsistent with our exclusion of carbon revenues when assessing profitability in the form of margins), and (b) distorted by the artificial or notional deemed sales of aggregates into the RMX within Hanson's management accounts, when in fact no such sales had ever taken place in reality as it was the same legal entity. However, we disagreed with Hanson for the reasons set out in Appendix 6.5, paragraph 22.

⁶⁹ We needed to tailor certain aspects of the profitability framework set out in Appendix 4.1 for the purpose of assessing cement profitability. These cement-specific methodologies are set out in Appendix 7.7.

- 7.134 There were also issues in relation to how the resulting analysis should be interpreted in the light of this unexpected slump in demand noted above. The period of review was shorter than we had wanted, but the GB cement producers were unable to provide us with robust financial information prior to 2007⁷⁰.
- 7.135 The GB producers whose profitability we analysed did not agree with all aspects of the preparation of our profitability analysis, and in particular the interpretation of this information in light of (a) the unexpected slump in demand and (b) the recently created ability of the GB cement producers to earn income from the selling of carbon allowances allocated to them for free under the EU ETS in excess of that required to support their levels of cement production ('carbon credits'). The GB producers' comments, and our response to the points they raised, are set out both here and in Appendices 4.1 and 7.7.
- 7.136 The key results of our analysis are set out in Tables 7.9 and 7.10. We adopted a 'comprehensive income' approach to assessing profitability by which all gains or losses, be they expected or unexpected at the beginning of each period and/or temporary in nature, were included in the measurement of profits earned over a period. Such an approach is a prerequisite⁷¹ to measuring the firms' economic profitability⁷² over the period of review. The principle of 'comprehensive income' was particularly relevant to the treatment of impairment losses and carbon credits in our analysis.

- *Handling of impairment losses*

- 7.137 Impairment losses is the accounting term given to the unexpected losses in the value of fixed assets. The GB cement producers suffered such losses in relation to some of their cement plant and machinery when they were forced by the economic circumstances following the slump in volumes in 2008 to either permanently close or mothball hitherto productive assets.
- 7.138 Unlike most ongoing costs of running a cement business which on the whole will be relatively steady from one year to the next, impairment losses will by their nature be unpredictable, erratic, variable in quantum and hard to measure in nature. As a result, there is in practice a significant degree of subjectivity and imprecision associated with recognizing both the existence of and the extent of impairment losses suffered by firms. We handled this issue as follows.
- 7.139 We first recorded as impairments only those plants which had been permanently retired during a year (ie we recorded actual lost capacity) and/or where firms had impaired the assets in their own financial statements. Our view is that this approach to impairment recognizes that firms will take a long-term perspective when assessing these long-term assets' value to their business, expecting to ride out the ups and downs of the normal business cycle. As a result, firms will only impair these assets when economic circumstances force them unexpectedly to shut capacity permanently or the GAAP accounting rules require them to reduce the carrying value of fixed assets to their recoverable amount.

⁷⁰ We sought to gather financial information to calculate margins (a subset of the profitability information) over a period preceding 2007. However, all but one of the cement producers for a variety of reasons (many of which were connected to the fact that there had been changes in the ultimate ownership of the businesses in this sector prior to 2007) were not able to produce this information for us. We were therefore restricted to looking at financial information covering the period 2007 to 2012.

⁷¹ The requirement is that all gains and losses recorded in the balance sheet (other than transactions with owners, such as dividend payments) are included in the profit measure, so that the profit and loss account ties in with the balance sheet, the net profit in the former reconciling with the change in net assets in the latter.

⁷² The Guidelines, [paragraph 115](#).

7.140 Secondly, in recognition of the subjectivity of the recognition and measurement of impairment, we also present in Table 7.10 a sensitivity on the calculation of the firms' ROCE in each period, and averaged across the total period of review by presenting it both before and after impairment, with income in both cases measured on a comprehensive basis. In others words, the values of capital employed are consistent with the impairment losses, or lack of impairment losses, recorded in the associated profit and loss account.

- *Handling of income from carbon credits*

7.141 During the period of review the GB cement producers were able to realize revenues from the sale of surplus carbon allowances, partly because the slump in demand meant that the firms did not need to maintain the historical levels of cement production envisaged by the designers of the ETS and partly because the scheme incentivized the use of less carbon-intensive ways of producing cement. Thus income from this source reflected the policy intention of the ETS as tempered by subsequent events. Following the comprehensive income principle of including all gains and losses in the profitability analysis, we include this income in our analysis. We show income from this source separately in Table 7.9 together with impairment losses and, for some firms, restructuring costs.

Results of profitability analysis

7.142 In Table 7.9, we set out profitability across all the GB cement producers on a comprehensive CCA basis, ie on a post-impairment basis and including carbon credits. It is the profit and loss account and balance sheets prepared on this basis we have used to assess economic profitability.⁷³

⁷³ See Appendix 4.1, paragraphs 66–77, and Appendix 7.7, paragraphs 54–254, in for an explanation of the principles of asset valuation applied, and the detailed application of these principles in the case of cement, to derive our CCA profit and loss accounts and balance sheets.

TABLE 7.9 Profit & loss account and balance sheet for GB cement producers' over the period 2007 to 2012 based on HCA and CCA basis

	2007	2008	2009	2010	2011	2012
Cement sales (Mt)	12.2	10.5	7.8	8.1	8.7	8.4
Clinker production (Mt)	10.2	8.7	6.4	6.6	7.1	6.4
<i>HCA profit & loss</i>						
Revenues	842	791	640	647	711	676
Costs excluding depreciation	-672	-669	-513	-509	-535	-542
HCA depreciation	<u>-65</u>	<u>-63</u>	<u>-70</u>	<u>-61</u>	<u>-65</u>	<u>-55</u>
Subtotal	105	59	58	76	111	79
Restructuring costs	-18	-14	-12	-6	-7	-3
Impairment losses	-	-	-	-	-	-
Carbon credits	7	62	36	47	35	37
Profit reflecting all costs incurred	<u>94</u>	<u>107</u>	<u>81</u>	<u>117</u>	<u>139</u>	<u>113</u>
<i>HCA balance sheet</i>						
Plant & machinery / AICC	837	868	844	811	818	829
Other fixed assets	183	199	144	165	146	141
Net current assets	36	43	37	-3	-22	-48
Provisions	-92	-84	-41	-39	-61	-44
Total assets	<u>965</u>	<u>1,027</u>	<u>983</u>	<u>934</u>	<u>880</u>	<u>878</u>
Average of opening/closing balance	965	996	1,005	959	907	879
<i>CCA profit & loss</i>						
Revenues	842	791	640	647	711	676
Costs excluding depreciation	-672	-669	-513	-509	-535	-542
CCA depreciation (OCM)	-44	-37	-39	-40	-42	-43
CCA depreciation ('holding gains')	<u>34</u>	<u>34</u>	<u>33</u>	<u>33</u>	<u>32</u>	<u>32</u>
Profit before separately identified items	161	119	121	130	167	123
Restructuring costs	-18	-14	-12	-6	-7	-3
Impairment losses	-	-83	-	-	-	-
Carbon credits	7	62	36	47	35	37
Profit reflecting all costs incurred	<u>150</u>	<u>84</u>	<u>145</u>	<u>170</u>	<u>195</u>	<u>157</u>
<i>CCA balance sheet</i>						
Plant & machinery / AICC	1,127	1,091	1,085	1,077	1,068	1,057
Other fixed assets	183	199	144	165	146	141
Net current assets	36	43	37	-3	-22	-48
Provisions	-92	-84	-41	-39	-61	-44
Total assets	<u>1,254</u>	<u>1,250</u>	<u>1,225</u>	<u>1,201</u>	<u>1,130</u>	<u>1,106</u>
Average of opening/closing balance	1,259	1,252	1,237	1,213	1,165	1,118

Source: CC analysis based on Appendix 7.7, Annex A, Tables 1a to 4a.

7.143 In a competitive market we would expect prices to be set on the basis of those costs that firms expected to incur (or revenues they expected to earn) over the long run. Firms may not be able to recover lumpy and unexpected losses all at once in a situation where new entrants into the market would be only looking to set prices which recovered all their expected costs incurred over the long term. New entrants' expected costs would factor in the possibility of incurring impairment losses at some unforeseeable point in the future, but because, by definition, their existence and their precise timing and extent are unforeseeable, recovery of costs such as these would be on a smoothed basis over the expected lifetime of new entrants' investments.

7.144 Following the same principles, we would expect income from carbon credits, like any other factor influencing the level of profitability in any one period, eg fuel input prices, to feed into the process which sets prices in a competitive market to the extent that

income from such a source was foreseeable at the beginning of any one period and/or the consequence of firms' own actions.

Assessment of profitability

7.145 In Table 7.10 below we set out our calculation of CCA ROCE both before and after taking into account the impact of the estimated impairment losses during the period. We also calculate a measure of the ROCE return averaged over the whole period of review, the first three years of review (2007 to 2009) of review and the last three years of review (2010 to 2012). These first three years of years were characterized by disruption in the market-place as firms reacted to the slump in demand,⁷⁴ whilst the second three years reflected more stable, if subdued, market conditions.

TABLE 7.10 Summary financial results for GB cement producers' based on CCA basis and calculation of ROCE thereon over the period 2007 to 2012

	£m for profits and capital employed / % for ROCE						Averaged across		
	2007	2008	2009	2010	2011	2012	2007 to 2012	2007 to 2009	2010 to 2012
<i>Volumes</i>									
Cement sales (Mt)	12.2	10.5	7.8	8.1	8.7	8.4	9.3	10.2	8.4
Clinker production (Mt)	10.2	8.7	6.4	6.6	7.1	6.4	7.6	8.4	6.7
<i>Profit and loss account</i>									
Profits before impairment	150	167	145	170	195	157	164	154	174
Impairment	-	(83)	-	-	-	-	(14)	(28)	-
Profits after impairment	<u>150</u>	<u>84</u>	<u>145</u>	<u>170</u>	<u>195</u>	<u>157</u>	<u>150</u>	<u>126</u>	<u>174</u>
<i>Balance sheet</i>									
Capital employed before impairment	1,259	1,336	1,321	1,296	1,249	1,202	1,277	1,305	1,249
Capital employed after impairment	1,259	1,252	1,237	1,213	1,165	1,118	1,207	1,249	1,165
<i>ROCE</i>									
Before impact of impairment	12	13	11	13	16	13	13	12	14
After impact of impairment	12	7	12	14	17	14	12	10	15

Source: CC analysis based on Table 7.9.

Notes:

1. Calculation of averages does not take account of the impact of changes in the value of money over the period of review.
2. Calculation of capital employed before impairment does not take into account the impact of changes in the value of money on the accumulated impairment charge.

- *Firm-specific assessment*

7.146 As explained in Appendix 7.7, paragraph 35, the results of our profitability analysis, for example as set out in Table 7.10 above, are more informative of the profitability of the GB cement industry as a whole, rather than of the level of profitability in any period for each of the individual GB cement producers.⁷⁵ Accordingly we put less weight on the differences in the absolute levels of the profitability achieved by each of the different firms and more on the trend in profitability achieved over the period of review.

⁷⁴ In addition, Lafarge incurred £[redacted] million of restructuring costs in 2007 as it prepared to rationalize its portfolio of GB cement plants.

⁷⁵ Our valuation methodology produces asset valuations which reflect averages across both the different types of plant (better older plant like dry-process Cauldon valued on the same basis as poorer technology older plant like wet-process Northfleet) and averages of expected useful asset lives for these plants (Northfleet and the Westbury plant lasted 38 and around 45 years respectively before being permanently closed whereas we assume an average asset life of 50 years).

TABLE 7.11 Post-impairment profits and capital employed for individual GB cement producers' based on CCA basis and calculation of ROCE thereon over the period 2007 to 2012

	£ million						
	2007	2008	2009	2010	2011	2012	Average
<i>CCA profits</i>							
Lafarge	[REDACTED]						
Hanson	[REDACTED]						
Cemex	[REDACTED]						
Tarmac	[REDACTED]						
Total	<u>150</u>	<u>84</u>	<u>145</u>	<u>170</u>	<u>195</u>	<u>157</u>	<u>150</u>
<i>CCA capital employed (average)</i>							
Lafarge	[REDACTED]						
Hanson	[REDACTED]						
Cemex	[REDACTED]						
Tarmac	[REDACTED]						
Total	<u>1,259</u>	<u>1,252</u>	<u>1,237</u>	<u>1,213</u>	<u>1,165</u>	<u>1,118</u>	<u>1,207</u>
<i>CCA profits/CCA capital employed (%)</i>							
Lafarge	[REDACTED]						
Hanson	[REDACTED]						
Cemex	[REDACTED]						
Tarmac	[REDACTED]						
Weighted average	12	7	12	14	17	14	12

Source: CC analysis based on Appendix 7.7, Annex A, Tables 1a to 4a.

7.147 Bearing in mind the fact that the results are more robust for the GB cement industry as a whole, according to our estimates shown in Table 7.11, [Producer 1] and [Producer 2] are the most profitable cement producers in GB, and their profitability on a comprehensive post-impairment basis has averaged well in excess of their cost of capital over the most recent years of the time period we analysed.

7.148 [Producer 3] is somewhat and [Producer 4] is considerably less profitable when measured on the same basis. Their lower profitability might be expected as a result of their higher operating costs, which were not adjusted for in our calculations in a firm- or plant-specific manner.⁷⁶ In particular, [Producer 3's] profitability appears to have been adversely affected by its decision to operate its [REDACTED] plants at [REDACTED] less than full capacity. [Producer 4] is the least profitable firm. This is likely to result from [REDACTED].⁷⁷

Interpreting profitability during a prolonged downturn

7.149 One of the major themes over the period of review (2007 to 2012) has been the severe and prolonged economic downturn that occurred starting in 2008. The volume of cement production in 2009 was around 36 per cent lower than its peak in 2007. In response, firms permanently closed cement works sooner than they otherwise might have done and mothballed plants which they may not have otherwise mothballed had the severe downturn not occurred. This downturn seems to be the most severe downturn experienced in GB since the oil price crises in 1973, 40 years ago, or even the Second World War.

7.150 The nature, severity and timing of this downturn was unexpected. However, downturns in general (as well as upturns) are regular features of business life. As a result,

⁷⁶ The higher operating costs associated with less modern, or well-located, cement plants is one of the factors which would influence the profile of depreciation for that plant. As explained in paragraph 58 in Appendix 7.7 we have not adopted a plant-specific approach to asset valuation.

⁷⁷ [REDACTED]

firms have suffered real financial losses (impairments) to the value of their businesses and of their existing portfolio of cement assets which they were not necessarily expecting to occur at this particular point in time or with such severity.

- 7.151 Whilst the risk of impairment to the value of assets is a real cost to a business, it is one which may well never occur for any individual asset. However, when it does occur it will be unexpected in its timing. It will also be likely to affect a number of assets, be lumpy in nature, and be material. There may also be operational costs which peak in association with the unexpected closure or mothballing of hitherto productive assets.
- 7.152 Several respondents commented that we were looking at too short and economically turbulent a time to form the basis of any measured conclusion. For example, they said that the period of review was short in relation to the long-lived nature of the assets, there had been a slump in demand, excess capacity had emerged over the period of review, and demand had remained muted through to the end of 2012.
- 7.153 A potentially complicating factor in interpreting profitability is that impairment losses are a good example of the sort of 'unfulfilled expectations' that might otherwise obscure any excess profitability.⁷⁸ The CC Guidelines emphasize that it is the persistence of excess profitability that is the test of pricing power. This approach eliminates the possibility that windfall profits (the positive flip side of 'unfulfilled expectations') are responsible for excess profitability in any one year, as it would be highly unlikely that a firm would persistently earn windfall profits.
- 7.154 In circumstances like these it would have been preferable to assess profitability over a much longer period of time than we have been able to (given the constraints on the data we have been able to gather—see the footnote to paragraph 7.134). We would have preferred to analyse a time period which at a minimum covered a whole business cycle, so that a relatively longer period of results could be reviewed. This allows an assessment of profitability taken over at least a complete business cycle, rather than a series of years which are likely to reflect a depressed view of long-term profitability. Assessing profitability over at least a complete business cycle allows the reviewer to smooth out over time the impact of unexpected and lumpy costs (and revenues) such as impairment losses that may occur from time to time. Significant restructuring costs may be such an example, examples of which did occur in the period of review, at least for some of the GB cement producers.
- 7.155 Another factor which is relevant to interpreting the cement industry's profitability over a relatively limited period of review is that the inherent structure of the cement industry is highly leveraged. That is to say that, whilst additional capacity is very lumpy and costly, once the decision is made to run an individual kiln/plant, the marginal cost of supplying extra tonnage is relatively low. This means that it would be expected that profitability would improve significantly if spare capacity were retained during the downturn which could be used once the economy picked up.

Assessment of ROCE against cost of capital

- 7.156 As explained in paragraph 7.140, we estimated profitability on a comprehensive income basis, assessed both before and after accounting for the impact of impairment across the four GB cement producers. We found that, as shown in Table 7.10,

⁷⁸ The Guidelines state in [paragraph 125\(a\)](#) that 'A period of low profitability may occur during the course of a downturn in trading conditions, regardless of the state of competition in the affected market'.

ROCE had been on both bases somewhat in excess of our midpoint estimate of firms' cost of capital (10 per cent) averaged over the period.

- 7.157 We observed that the financial consequences of the slump in demand had been felt in the results for 2008 and 2009 and that subsequently a recovery in profitability had occurred. Whilst almost the whole of the period of review had been affected by the slump, it was helpful to distinguish between the period up to 2009 and the more stable period from 2010 onwards. In response to the downturn in demand, the firms took out a lot of costs from their businesses, but it appeared that these cost reductions had not been subsequently competed away.
- 7.158 The profitability results for 2012 reflected a softening in overall demand (cement volumes sold in GB declined by 7 per cent on 2011—see paragraph 2.53⁷⁹) in a year where the threat of a triple dip recession had hovered over the UK economy, and there had been a notable weakening in the averaged prices achieved by [§] from 2011 to 2012.⁸⁰ As a result, profitability measured on a CCA basis reduced from 2011 to 2012, but profitability remained above average for the six-year period.
- 7.159 However, we considered that the period over which we had assessed the profitability of the GB producers was unlikely to be representative of the profitability that would have been expected over a normal business cycle. Rather it was likely to reflect the severe and persistent economic downturn that had obtained since 2008.⁸¹ We therefore considered that the size of the gap between our estimate of the GB producers' returns and their cost of capital was likely to underestimate the extent of the limitation, if any, in the competitive process over this period.⁸²

- *Cash flows generated from operations*

- 7.160 Because of the challenges of assessing the trends in underlying profitability in a prolonged slump we also looked at a measure of cash flow generated by the firms from their cement operations, which we derived from our analysis of firms' profitability and which used financial data previously set out in our provisional findings. Assessing cash flows generated from operations allows us to focus on underlying trends by placing to one side all the issues associated with placing values on the firms' productive assets and depreciating these values.
- 7.161 Cash flows generated from operations were measured on the basis of comprehensive (ie reflecting all revenues earned and costs incurred in the period) HCA profit less the non-cash flow element of profit, in this case depreciation. Cash flows generated from operations are not a measure of economic profitability⁸³ but they do give an indication (as with margins) of the resilience of these businesses in a period when all but Tarmac⁸⁴ were closing operations and at the same time substantially restructuring their businesses.
- 7.162 Table 7.12 shows both the absolute and per tonne cash flows generated from operations including carbon credits. In both cases we restated each year's cash flows

⁷⁹ Volumes sold by the GB cement producers fell 4 per cent between 2011 and 2012 (based on data in Table 7.9).

⁸⁰ Lafarge's real gross unit revenues [§] per cent, Tarmac's [§] per cent, Hanson's [§] per cent, whereas Cemex's [§] per cent. See Appendix 7.7, Table 17, for the source data for these percentage changes between 2011 and 2012.

⁸¹ The Guidelines state in [paragraph 125\(a\)](#) that 'A period of low profitability may occur during the course of a downturn in trading conditions, regardless of the state of competition in the affected market'.

⁸² The Guidelines, [paragraph 118](#).

⁸³ In other words, they do not factor in the need over the longer term to reinvest in the business to maintain, for example, depreciable assets.

⁸⁴ Tarmac operated a single modern efficient plant at Tunstead at its maximum capacity throughout the period of review.

generated from operations in the prices of 2011, so that these amounts were stated on a comparable basis across the period of review.

TABLE 7.12 Total and unit per tonne cash flows generated from operations between 2007 and 2012 (2011 prices)

	Absolute real terms (£m) (2011 as base year)						Unit real terms (£ per tonne) (2011 as base year)					
	2007	2008	2009	2010	2011	2012	2007	2008	2009	2010	2011	2012
Total/weighted average	182	188	163	186	204	163	14.9	17.9	21.0	23.1	23.4	19.5

Source: Appendix 7.7, Table 19; CPI index from ONS.

Note: Cash flows generated from operations are derived from HCA profits after all items and include carbon credit income.

7.163 This analysis reveals that the trends in cash flows generated from operations were consistent with the trends in profitability observed over this period. These trends also indicated the resilience of the GB cement producers during this period.

Margins

7.165 Appendix 6.4 describes the methodology we used to calculate the profit margins⁸⁵ of the GB producers and importers on cement, and to compare these profit margins between firms and over time. Appendices 6.5 and 6.6 set out the results of this analysis in detail.

7.166 The purpose of our analysis of margins was to explore how margins have performed historically against changes in market demand and cost conditions, and the extent of variation in margin performance between market participants. The purpose of our analysis of margins was not to determine whether margins could be deemed high or excessive. Such analysis forms parts of our profitability assessment (see paragraphs 7.132 to 7.159).

7.167 Table 7.13 summarizes the results of our analysis of average annual cement prices for 2007 to 2012, and Table 7.14 summarizes the results of our analysis of the profit margins of the GB producers' cement operations.

TABLE 7.13 Average prices of cement, nominal and real terms (based to 2011)

	£/tonne						
	2007	2008	2009	2010	2011	2012	
<i>Weighted average prices, nominal terms</i>							
Bulk CEM I sold to independents	67.4	74.7	81.6	78.7	79.8	79.6	
Bagged cement sold to independents	75.2	81.6	90.5	89	91.7	95.5	
<i>Weighted average prices, real terms (2011 as base year)</i>							
Bulk CEM I sold to independents	77.0	82.4	88	82.2	79.8	77.9	
Bagged cement sold to independents	85.9	89.9	97.7	92.9	91.7	92.8	

Source: CC, based on GB producers' transaction data.

Note: Nominal average prices were calculated by dividing total revenues in a year by total volumes in the same year, for sales of bulk CEM I to independent customers and for sales of bagged cement to independent customers. The weighted average prices are calculated by weighting each GB producer's prices in proportion to its volume sales. Nominal prices were converted to real prices using the CPI index (based to 100 for year 2011).

⁸⁵ In broad terms, profit margins may be thought of as the difference between a firm's revenues and its costs. More detailed definitions of the margins we calculated are in Appendix 6.4.

TABLE 7.14 Variable profit and EBITDA margins of the GB cement producers

	<i>per cent</i>					
	2007	2008	2009	2010	2011	2012
<i>Variable profit margins*</i>						
Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>EBITDA margins*</i>						
Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC, based on GB producers' data.

*On external cement sales.

7.168 In summary, the results of our profit margin analysis of the GB producers' cement operations over the period 2007 to 2012 were that:

- (a) Average cement prices had increased between 2007 and 2009 in real terms, to then reduce between 2009 and 2012 in real terms. In particular, we found that in 2009, a year when the full 12 months' impact of the sharp market downturn would have been felt, and despite the GB producers telling us that they had cut costs in response to the economic downturn, the average unit price of bulk CEM I cement (in real terms) charged by each of the four GB producers to independent customers increased on prior year levels.⁸⁶ Overall, between 2007 and 2012, average cement prices had increased in real terms (by 1 per cent for bulk cement and 8 per cent for bagged cement—see Appendix 7.8). Prices had generally kept pace with, or increased at a faster pace than, unit variable costs, resulting in variable profit margins at the least being successfully maintained over this period against a backdrop of declining market volumes and increasing costs.
- (b) We found that the full 12 months' impact of the sharp downturn in market demand in FY09⁸⁷ also did not have a negative impact on the GB producers' variable profit margins (on external sales only), with three of the producers experiencing increases in margins whilst the other producer's margins remained broadly flat on prior year levels. Between FY09 and FY11, the GB producers' variable profit margins remained relatively stable and resilient, with margins moving within a relatively tight range (ie between one and three percentage points over the three years). We also found that three of the four GB producers' EBITDA margins exhibited stable or increasing trends between 2009 and 2011.⁸⁸ This suggested that any variable or fixed cost savings had contributed towards preservation—or even increase—of margins rather than commensurate price reductions for customers. In FY12, we found that variable profit and EBITDA margins declined for three GB producers whilst the other producer was able to maintain its FY12 margins at levels very similar to previous years.

7.169 As set out in paragraph 7.106, our analysis of the margins of the independent cement importers for which we had data showed that their margins were volatile and had declined over time, notwithstanding stable or increasing price trends. The indepen-

⁸⁶ The real price increase from FY08 to FY09 in relation to bulk CEM I prices were: (a) from £[REDACTED] to £[REDACTED] per tonne for Lafarge; (b) from £[REDACTED] to £[REDACTED] for Cemex; (c) from £[REDACTED] to £[REDACTED] for Hanson; and (d) from £[REDACTED] to £[REDACTED] for Tarmac.

⁸⁷ Whilst the market downturn began towards the end of FY08, we examined the impact of the downturn from FY09 onwards in our margin analysis, when the full impact of the downturn would have been felt.

⁸⁸ Appendix 6.5, paragraph 67.

dent importers' EBITDA margins were also significantly lower than the GB producers' EBITDA margins.

Pricing and price dispersion

- 7.170 Cement prices are negotiated with customers, and can depend on a number of factors, including delivery distance, type of cement, size of order and the customer's bargaining power.
- 7.171 The GB producers explained to us how prices for cement were set through negotiations with customers, and the factors that the price eventually agreed would depend on (see Appendix 7.8). This evidence showed that each GB producer would have a large number of pricing points at any given point in time, which could be widely dispersed.
- 7.172 We analysed the extent of dispersion in prices paid by different customers for each GB producer, separately for bulk and bagged cement, based on each GB producer's transaction data (see Appendix 7.8). In the case of bulk cement, we undertook the analysis for (a) all external customers, (b) independent customers only, and (c) other Majors only, both for delivered prices and ex-shipping point prices. We restricted the analysis to bulk CEM I sales for comparability purposes. In the case of bagged cement, we undertook the analysis for independent customers only, for both delivered and ex-shipping point prices. It was not possible to further break down our analysis for bagged cement (eg by type of cement) due to the nature of the transaction data provided to us by the GB producers.
- 7.173 The purpose of our analysis of price dispersion was to:
- (a) assess the feasibility of coordination on prices—in particular, low levels of price dispersion can be consistent with coordination on prices, while coordination on prices will be more difficult to introduce and sustain where price dispersion is higher; and
 - (b) further our understanding of how competition takes place in cement—in particular, we wanted to understand whether there was a fixed amount of dispersion, which could indicate that there was a maximum dispersion that producers could sustain before customers realized that others get better terms; and whether we saw evidence of price dispersion increasing in periods where the market was more dynamic in respect of customer switching.
- 7.174 We found that:
- (a) There was significant variation in the prices of bulk cement charged to different customers, even when we controlled for delivery distance (by looking at ex-shipping point prices). We found that, for the GB producer with the least dispersion in price, there was a range of £[redacted] to £[redacted] per tonne (representing [redacted] to [redacted] per cent of the average price of cement) between its highest and lowest prices over the period Q1 2007 to Q4 2011. For the GB producer with the greatest dispersion in price, there was a range of £[redacted] to £[redacted] per tonne between its highest and lowest price (representing [redacted] to [redacted] per cent of the average price of cement) over the same period.⁸⁹

⁸⁹ These figures are based on calculations using the difference in prices paid by 90 per cent of customers ie ignoring the prices paid by the 5 per cent of customers paying the lowest and highest prices to omit any erroneously low or high prices.

- (b) In the case of delivered prices of bulk cement to all external customers, price dispersion appeared to have increased over time for [REDACTED], [REDACTED] and [REDACTED], with [REDACTED] and [REDACTED] data showing distinct highs in Q1 2009, which was a period of higher switching related to the 2009 internalization of volumes by [REDACTED] from [REDACTED]. [REDACTED] and [REDACTED] data also showed higher dispersion in 2011, when we observed some changes in [REDACTED] and [REDACTED] market shares. [REDACTED] data also showed higher dispersions in Q1 2009, as well as in Q4 2009. [REDACTED] price dispersion showed peaks in Q1 2008 and Q4 2008, and then decreased over subsequent quarters. Results based on ex-shipping point prices to all external customers were broadly similar for [REDACTED], [REDACTED] and [REDACTED].
- (c) In the case of delivered prices of bulk cement to independent customers, price dispersion appeared to have increased over time for [REDACTED] and [REDACTED], with a distinct high in Q1 2009 in the case of Lafarge, and across most of 2009 in the case of [REDACTED]. [REDACTED] data did not show an upward nor a downward trend, though we observed higher dispersion in Q1 2009 and Q4 2009. [REDACTED] and [REDACTED] data also showed higher dispersion in early 2011. [REDACTED] data showed higher dispersion in Q1 2008 and Q4 2008, with a downward trend in dispersion over the period 2009 to 2011. Results based on ex-shipping point prices to independent customers were broadly similar for [REDACTED], [REDACTED] and [REDACTED].
- (d) In the case of delivered prices of bulk cement to other Majors, price dispersion was generally lower than that for independent customers. Also, price dispersion in delivered prices to other Majors appeared to have increased over time for [REDACTED] and [REDACTED], with higher dispersion observed, among other quarters, in Q1 2009. [REDACTED] data showed higher dispersion in Q3 2008 to Q1 2009, as well as in Q4 2009 to Q1 2010. [REDACTED] data showed a downward trend in dispersion, with a peak in dispersion in Q1 2009. Results based on ex-shipping point prices to other Majors were broadly similar for [REDACTED] and [REDACTED], while for [REDACTED] we no longer observed a peak in dispersion in Q1 2009.
- (e) In the case of bagged cement, there was significant variation in both delivered and ex-shipping point prices charged to different customers, though this might be partly due to product mix (such as type of cement, or size of bag), for which we were not able to control. Trends over time are less likely to be affected by product mix (unless there are large changes in the breakdown of sales of bagged cement between different types of bagged cement). Our analysis showed that dispersion in [REDACTED] prices had fallen over the period Q1 2007 to Q4 2011, [REDACTED] and [REDACTED] dispersions had increased over the same period, while [REDACTED] dispersion remained similar in 2007 and 2011. We also found that dispersion tended to increase in Q1 for all GB producers, compared with other quarters, which may be related to price increases (see paragraph 7.194).

7.175 A consequence of this dispersion in prices to individual customers is that cement prices paid by individual customers are not completely transparent to competitors or to other customers, although estimates of cement prices (eg an upper and lower bound) may be possible through information on prices set by cement customers downstream (eg the price of RMX) and also through sales negotiations with existing and potential customers.⁹⁰ However, there is considerable transparency on price increases that are sought by cement suppliers. The four GB cement producers (Cemex, Hanson, Lafarge and Tarmac)—and some other cement suppliers in GB—

⁹⁰ Hanson told us that market intelligence and feedback received from customers was not always reliable. Similarly, Cemex told us that customers were driven by their own agenda and therefore that the feedback from these customers was not always reliable. However, as set out here, we considered that this information could be used to infer estimates of cement prices (eg upper and lower bounds) rather than to precisely determine the prices set by competitors to specific customers.

regularly send out generic letters to their customers informing them of cement price increases. Our analysis of these letters is described in paragraphs 7.189 to 7.211.

Customer switching

- 7.176 Analysing customer switching behaviour (see paragraphs 7.177 to 7.183) and changes in shares (see paragraphs 7.6 to 7.16 and 7.184 to 7.187) is relevant to assessing coordination in the context of the sustainability of coordination and determining how coordination may take place in practice.
- 7.177 We conducted an analysis of switching by bulk cement customers between 2007 and 2011. Our methodology and results are described in detail in Appendix 7.9. There were two key caveats to our analysis which meant that our analysis might not necessarily capture the full extent of customer switching between cement suppliers:
- (a) The data available to us included delivered sales of bulk cement only, and did not include bagged cement or collected sales.
 - (b) We only had data for three cement importers (who collectively accounted for just over half of the cement imported into GB in 2011, excluding volumes imported by Aggregate Industries), so switching from/to all other importers was not taken into account in our analysis. However, we also analysed other data on the amount of switching to and from importers (see paragraphs 7.110 to 7.117).
- 7.178 We examined:
- (a) patterns in switching over time and across suppliers;
 - (b) the relationship between switching and market shares; and
 - (c) the relationship between switching and prices.
- 7.179 We found that the degree of switching varied greatly across suppliers and over time, but we observed overall that:
- (a) The end of 2008 and all of 2009 stand out as periods with relatively high levels of switching, reflecting the 2009 internalization event (see paragraphs 7.230 to 7.238) and all the switching of cross-sales and independent customers that followed.
 - (b) Some further internalizations also occurred towards the end of 2010/beginning of 2011, although on a much smaller scale.
 - (c) Importers' wins were mainly from the largest three cement suppliers (Lafarge, Hanson, Cemex—'the Top 3'), while the Top 3 were both losing customers to the importers and winning customers from them. This is consistent with an increase in importers' combined market share in the period from 2007 to 2011.
 - (d) Our analysis of annualized data did not reveal any obvious patterns in the switching among the Top 3 suppliers, such as matching of wins and losses.⁹¹ There was also no consistent pattern in whether switching was greater or smaller than one might expect from market shares.

⁹¹ However, our analysis did not include switching of bagged cement purchases or changes in GGBS purchases.

(e) We observed some correlations of wins and losses among the Top 3 suppliers and, to some extent, Aggregate Industries and Tarmac. These results on patterns in customer wins and losses were consistent with the patterns in month-by-month changes in shares of sales (see paragraphs 7.184 to 7.187).

7.180 With respect to the relationship between switching and prices, we found that:

(a) [X] of customers that switched achieved lower prices. [X]

(b) Customers switching in 2007 and 2008 did not achieve price reductions on average, but switching from 2009 onwards resulted in customers paying lower prices after switching on average (although this varied by supplier).

(c) There seemed to be a peak in the price dispersion for some suppliers in periods where switching activity was higher (eg Q1 2009).

7.181 As noted in the previous paragraph, considering the market as a whole, we found that customers who switched had achieved lower prices on average from 2009, whereas this was not the case prior to 2009 (there were some small increases in prices after switching on average). We also noted that the period prior to Q1 2009 was a period with large increases in average prices of cement. Taken together, these two observations indicated that customers who had switched were likely to have experienced lower price increases (prior to 2009) or price reductions (after 2009) compared with customers who did not switch. This suggested to us that switching was likely to be a more effective discipline on price paid by an individual customer than on the average price in the market, and that customers who did not switch were not benefiting from the relatively lower prices of those who did, ie there was price discrimination in this market. The fact that there were peaks in the amount of price dispersion in periods where switching activity was higher also suggested that the customers who did not switch were not benefiting from the switching activity of others.

7.182 Hanson noted that our analysis did not take into account the effect of threats to switch on prices (ie customers' threats to switch could mean they achieved lower prices with their existing suppliers).⁹² Whilst it was the case that our analysis did not take into account threats to switch, as noted in the previous paragraph, our analysis suggested that customers who had switched obtained better terms, on average, than customers who did not switch (whether or not they had threatened to switch). In addition to this, we also noted that our analysis of GB cement producers margins and profitability also indicated that, even if customers had switched or threatened to switch, this had not resulted in the erosion of GB cement producers margins and profitability.

7.183 Some of the Majors provided their own win/loss records to us. We compared this data (in particular, total volumes won/lost from each of the other competitors) with the data we used in our switching analysis, focusing only on bulk cement. We noted that we would not necessarily have expected the volumes (either in absolute terms or in terms of relative proportions) to be the same for a variety of reasons, as set out in Appendix 7.9. However, both data sets indicated similar patterns in the switching behaviour of Lafarge, Hanson and Cemex.

⁹² Hanson provided some examples of large Hanson customers who had switched or threatened to switch and Hanson set out the actual price changes that Hanson had therefore had to make to these customers for the period 2011/12. We analysed these examples in relation to customers who threatened to switch in 2011, and looked at the price change for these customers compared with the price they obtained in 2010. We found that one of four customers that threatened to switch had experienced a price increase, one had experienced no change in price, and two had experienced a price reduction, although it was not as large a price reduction as that reported by Hanson.

Month-by-month changes in shares of sales

- 7.184 To further understand changes in shares of sales over time, we analysed changes in monthly shares of sales from total GB sales of the GB cement producers⁹³ to assess the volatility of shares and the degree of ‘negative autocorrelation’⁹⁴ in changes in own shares of sales. Because of our concerns about possible coordination among the GB producers (see paragraph 4.20), our analysis focused on their shares of sales relative to each other, ie importers were not included.
- 7.185 Details of our analysis are in Appendix 7.10. We found statistically significant negative correlation coefficients in own share of sales changes from one month to the other for two of the GB cement producers ([X] and [X]). The coefficients for [X] and [X] were negative but were not statistically significant. The coefficients were larger (in absolute value) for [X] and [X], less so for [X] and [X]. This is likely to be due to the fact that the [X] and [X] share has been more stable overall over the period, whereas the [X] share reduced (so that overall reductions in share exceeded overall increases month to month) and the [X] share increased.
- 7.186 We also calculated the correlation between change in own share in a given month and the total change in own share in the following two months, and this increased the negative correlation except in the case of [X]. The coefficients were statistically significant for the three largest cement producers ([X]) when looking at correlation between change in own share in one month and total change in own share in the following two months, but the coefficient was not statistically significant for [X].
- 7.187 Cemex submitted that, if internal sales were excluded from the market share calculations, the negative autocorrelation in monthly market shares disappeared. We did not agree that market shares excluding internal sales were the correct shares to look at: overall sales of cement, rather than external sales of cement, govern overall profits.

Cement: conduct

- 7.188 In light of what the Guidelines say on how the CC may take into account conduct of market participants in its AEC assessment (see paragraphs 4.16 and 4.28) and our unilateral market power and coordination theories of harm (see paragraph 4.20), in this subsection we look at the following aspects of firms’ conduct in the bulk and bagged cement markets in GB:
- (a) price announcement letters;
 - (b) price parallelism;
 - (c) cross-sales; and
 - (d) a large internalization of cement purchases by one Major in 2009.

⁹³ In other words, we looked at changes in each producer’s share of GB cement sales as a proportion of total cement sales made by GB producers.

⁹⁴ Negative autocorrelation would be high if a large increase in the share of Producer A relative to other producers in one month was followed by a large reduction in the share of Producer A relative to other producers in the following month(s).

Price announcement letters

7.189 We undertook an analysis of the GB producers' price announcement letters as part of our wider analysis of competition in GB cement markets, in particular our coordination theory of harm (see paragraph 4.26). Price increase letters could serve as a focal point for coordination (if it were occurring), or they could be used by the GB cement producers to signal to each other the expected outcome from coordination (ie the level of price or of price increase which is sought in the coordinated outcome, thereby facilitating price parallelism). Price announcement letters may also provide information on whether there is a price leader (and the identity of that leader), and which companies may be price followers. It is also relevant to analyse the extent to which the GB cement producers are able to realize announced price increases, as an inability to realize announced price increases may mean that price announcement letters cannot serve as a focal point for any existing or potential coordination.

7.190 Cement suppliers regularly send out letters to their customers to notify them that the supplier in question plans to increase its prices for cement.⁹⁵ These letters are usually sent out at least once a year—though in one year (2008) they were sent out more than once—and are usually sent at least one month before the date of the planned increase.⁹⁶ In this subsection, we present the available information on the announcement letters sent by the GB cement producers to their customers, and set out our analysis on the extent to which these announcements are translated into increases in realized prices.

7.191 In this subsection we:

- (a) analyse the timing and content of price announcement letters;
- (b) report our findings on whether prices paid by customers increased following a price increase announcement, and, if so, to what extent; and
- (c) examine the dispersion of the realized price increases across customers.

Timing and content of price announcement letters

7.192 Appendix 7.11 describes the data that we obtained from the GB cement producers on their price announcement letters for grey cement. We focused our analysis on price increase announcement letters for bulk CEM I because (a) CEM I makes up the majority of the GB producers' sales, as well as being an input into non-CEM I products and (b) the time and resources available for our investigation were limited.

7.193 Appendix 7.11 summarizes the information we received on announced price increases for bulk CEM I.⁹⁷ There is a clear parallelism between the GB cement

⁹⁵ The GB producers noted that price announcement letters did not always translate into realized price increases, stating that the letters were typically the start of a negotiation with a customer. We assess this in paragraphs 7.205–7.208. In addition, Hanson told us that customers often received volume rebates, which were private and could change from time to time. According to Hanson, such rebates reduced any price transparency provided by price increase letters. We have used prices net of rebates in our analysis.

⁹⁶ Although we observe instances where realized prices fall for most GB producers, none of them has sent out any letter which announced a price decrease, or no changes to existing prices. Hanson suggested to us that it would be ill considered and unusual to send letters to confirm price reductions in times of continuing cost inflation. Tarmac noted that decreased prices would be the result of bilateral negotiations rather than announced price reductions. Tarmac also told us that observed reductions in average price could be due to changes in customer or product mix, even though individual prices had not changed.

⁹⁷ We note that most GB producers are customers of each other (see paragraph 7.228) and would therefore receive these price announcement letters directly, in their capacity as cement customers. Lafarge told us that its RMX operations, which buy cement from other GB producers, were separate from its cement operations. Lafarge also told us that only its RMX operations received price announcement letters from other GB producers and that these letters were not systematically passed on to

producers both in terms of the dates for their price increases and in terms of the amounts of their announced increases, although to an extent the similarities between producers in the dates for their price increases could be expected as 1 January increases are standard in many industries.⁹⁸

- 7.194 Cemex told us that we had not been able to substantiate our claim that there was parallelism in price announcements. It said that eight of the twelve announcements became effective on 1 January, and that, as noted above, such announcements were standard in many industries. We noted that the fact that such announcements were standard in many industries did not prevent them possibly harming competition in the cement industry.
- 7.195 As well as 1 January price announcements, there are also occasionally mid-year announcements which are particularly notable for the parallelism in the dates of their announcement, the date of increase and the amount of announced increase. In particular, the increase for 1 August 2008 was announced in late June by all the GB producers within days of each other: Both Hanson and Cemex sent their letters out on 25 June, Lafarge sent letters out on 26 June and Tarmac sent letters out on 30 June. The amounts of the announced price increases were also similar, ranging between £3.40 per tonne and £4.00 per tonne, depending on the product.⁹⁹
- 7.196 In its response to our provisional findings, Cemex told us that a partial pattern of price announcements would occur in any market with four large players, and that the CC should compare its findings with other similar industries to assess the robustness of its findings in this regard. Similarly, Hanson, in its response to our provisional findings (paragraph 9.42.1), told us that one firm leading price announcements in any year and others following with similar price announcements was what would be expected in a competitive market; it further argued that, given that GB producers had similar input cost drivers, it was not surprising that they chose to pass on cost changes at broadly similar points in time (and indeed this would be expected under perfect competition). We agreed that other industries may also make use of price announcement letters; and did not consider that price announcement letters were, by themselves, conclusive evidence of shortcomings in competition. We formed a view on the impact of price announcement letters on competition in the GB cement markets in the context of all the evidence we obtained, considered in the round.
- 7.197 Hanson also told us (in its response to the provisional findings, paragraph 9.42.1) that in some cases there was a long delay between the leader's and the followers' announcements. We agreed that in some cases there were relatively long times between announcements of the different firms; however, despite the length of time between announcements, it remained the case that the announced increases took place at the same date and were of similar magnitude.
- 7.198 In most cases, once a GB producer had announced price increases for a certain date, the other GB producers also announced similar increases within one or two months. The other partial 'pattern' that emerges is that, in five out of the nine¹⁰⁰ price announcements, Lafarge was the first mover. Hanson often acted second and either

Lafarge's cement operations. We note that internal documents from Lafarge show that price announcement letters from other GB producers have been passed on to Lafarge's cement operations on several occasions.

⁹⁸ Hanson told us that in its view there was significant divergence in the timing and amounts of the price increase proposals, as even price increases for the calendar year ahead had been issued weeks or months apart.

⁹⁹ Cemex told us that the 2008 increases by each GB producer reflected an effort to protect margins by passing through increased costs to customers, and that the correlation between the magnitudes of announced increases was therefore unsurprising. Hanson told us that the 2008 mid-year announcement was initiated by extraordinary and rapid increases in costs, which had to be recovered before the next year.

¹⁰⁰ Or five out of eight if we count the 1 January 2010 and 1 March 2010 announced price increases as being part of the same round of announced price increases, as they were announced around the same time.

Tarmac or Cemex came next. This is not a general rule and there are some exceptions, notably in 2010, when Tarmac and Hanson announced a price increase to become effective in January 2010, and Cemex and Lafarge announced an increase to become effective in March 2010 (although they announced their increases shortly after Hanson and Tarmac announced theirs).

7.199 Hanson told us that the evidence to prove that Lafarge was a price leader was not sufficient. Hanson told us that our analysis that Lafarge was the first to announce price increases on five of the nine occasions was not proof of price leadership, and that statistically, there existed a 43 per cent probability that one firm would be first to announce in a market where three firms competed over nine periods. Hanson also told us that using this statistically probable outcome as evidence of a 'partial pattern' was an inadequate benchmark. Hanson commented that the period of our analysis of price announcement letters went back further (to 2006) than the other analysis.¹⁰¹ Although we agreed that Lafarge had not taken a leadership role in all the price announcement rounds we analysed, we noted that, in the earlier years of the analysis (January 2006 to January 2009), Lafarge had been the first to announce price increases in all four January price announcements. We attributed more weight to the patterns of price announcement which we observed in the earlier years of the period we analysed, prior to the industry being under regulatory scrutiny. The reason why we included 2006 in this analysis was because data was available for 2006 for price announcements, which was not the case for many of the other data sets required for the other analyses we undertook.

7.200 In at least half of the price announcement rounds, Lafarge was the first to announce a price increase, and was then followed by the other GB producers which announced similar increases. Lafarge was more often the first to announce price increases in the earlier part of the period we analysed (2006 to 2009). While this piece of analysis is only one part of our assessment of competition in the GB cement markets, the observation that Lafarge was often first to announce a price increase, followed by the other GB producers announcing similar increases, seems more consistent with cement suppliers accommodating Lafarge's first move rather than trying to compete strongly on prices to increase volumes to take advantage of Lafarge's price increases.¹⁰² The practice of sending out such price increase announcements, and the accommodation of the first announced increase by other firms in subsequent price announcements, can facilitate price parallelism. The cement suppliers appear to be signalling that they will try to accommodate the other GB producers' price increases in many cases.^{103, 104}

7.201 The reasons that the GB producers gave us for sending out cement price announcement letters are set out in Appendix 7.11, and include customer requirements for

¹⁰¹ [Hanson response to provisional findings](#), paragraphs 6.5.8, 6.5.9, 9.42.2 & 11.1.

¹⁰² Cemex told us that there was no price leadership in the market, and that it did not take into account its position in any sequence of announcements. This claim is contradicted by internal documents we obtained from Cemex (see, for example, paragraph 8.88).

¹⁰³ Cemex told us that if there were consistent differences across producers as regards price increases, then producers' prices would not move in parallel over time. In particular, Lafarge systematically announcing a smaller increase than other producers would not be consistent with prices moving in parallel. We note that realized prices, to a considerable extent, do move in parallel (see paragraph 7.223). Cemex also told us that the GB producers generally announced different increases, as apparent from Appendix 7.11, Table 1. We note that although increases are not identical across the GB producers, announced price increases tend to be similar in size. Cemex told us in its [response to our provisional findings](#) (paragraphs 8.8 & 8.9) that, in percentage terms, the announced price increases differed to a considerable extent. However, we considered that it was the magnitude of the announced price increase as a percentage of the actual price that was relevant (and these tended to be similar in size), not one firm's increase as a percentage of another firm's increase.

¹⁰⁴ Tarmac told us that it considered that its price announcements represented a competitive opening offer to the market, but were made to existing customers only. Tarmac also told us that an increased sales volume could be achieved by attracting new business through strong price competition, and that customers were able to achieve lower prices through switching. Tarmac stated that it did not accept that price announcements represented signalling and accommodation between the GB producers. Finally, Tarmac said that there were circumstances in which its price increase ambitions based on cost recovery would be constrained by competitors' published announcements.

such letters, recovery of forecast cost increases and recovery of actual cost increases previously not recovered (or under-recovered). We note that there may be legitimate reasons for notifying customers of planned or intended price increases. However, this does not preclude them from serving other, anti-competitive purposes at the same time.

- 7.202 During our investigation, we found some internal documents from the GB producers that discussed price announcement letters and the related strategy (see Appendices 8.2, 8.3 and 8.4). These documents tended to confirm our interpretation of the patterns we found in the GB producers' price announcement letters, as set out in paragraph 7.200.
- 7.203 Appendix 7.11, Figures 1 and 2, show the nominal and cumulative announced price increases over time for the different suppliers and for the different types of bulk cement, as provided by the GB cement producers. In general, the charts show very similar announced price increases by the different suppliers (by product).
- 7.204 Cemex made a number of significant changes to its pricing strategy with effect from 1 January 2013. Under these changes, Cemex proposes to introduce a gross price list for all customers; define rebates netted off gross price list for all customers; plan for two price increases in 2013 (on 1 April and 1 October); and introduce a fuel surcharge mechanism (see Appendix 7.11, Table 1). In our provisional findings, we considered the impact of Cemex's proposed changes and said that the scope for these changes to disrupt the patterns in price announcements that we observed was unclear (see also Appendix 7.11, paragraph 10). In their responses to the provisional findings, Lafarge Tarmac and Cemex told us that we needed to examine the impact of Cemex's new pricing strategy further and consider how it might impact on the scope for coordination.¹⁰⁵ We further reviewed the changes to Cemex's pricing strategy and came to the view that we could not place great weight on this change as Cemex could easily revert to previous price announcement behaviour and Cemex had introduced the new strategy whilst under close regulatory scrutiny. In any event, we consider that the coordination mechanism we have identified (which was consistent with the evidence and our analysis—see paragraphs 8.289 to 8.293) does not depend strongly on price announcements. Whilst price announcement behaviour supports coordination on market share, we do not believe that coordination could be prevented purely by eliminating generalized price announcements.¹⁰⁶ We consider, therefore, that Cemex's changes are unlikely to have more than a very limited impact on the scope for coordination on market shares.

Announced versus realized prices

- 7.205 We were told by the GB cement producers that they were rarely able to realize fully the price increases announced in price announcement letters—we summarize their submissions on this subject in Appendix 7.11. We analysed the extent to which realized price increases followed price increase announcements. In order to do this, we calculated the average realized change in customers' prices observed in the transactions data submitted by the GB producers and compared this with the price increases that they announced. We aimed in this way to understand:

(a) whether the GB cement producers were able to increase prices following a price increase announcement;

¹⁰⁵ [Lafarge Tarmac response to provisional findings](#), paragraphs 176 & 177; [Cemex response to provisional findings](#), paragraphs 7.50 & 7.51.

¹⁰⁶ However, preventing generalized price announcements could support other measures to disrupt coordination—see paragraph 13.367.

(b) if so, how the realized price increase compared with the announced increase; and

(c) whether there was a discernible pattern in observed average price changes that was consistent across the GB cement producers.

7.206 All our analysis was undertaken on delivered prices only, as we understand that the increase in price shown in the price announcement letters applied to the delivered price to the customer.¹⁰⁷ We calculated monthly average per tonne prices by dividing each GB cement producer's total amount invoiced from independent customers by the GB cement producer's total quantity delivered to independent customers per month. Invoiced amounts net of rebates were used. Also we focused solely on external sales to independents (for the reasons set out in paragraph 7.216), although for completeness, we present results using all external sales in Appendix 7.11.¹⁰⁸ Data was averaged across product and period.

7.207 The results of our analysis are set out in Appendix 7.11. In summary, our analysis showed that:

(a) In almost all cases that we analysed, the GB cement producers were able to increase the average price paid by their customers following a price increase announcement.

(b) For all GB cement producers, price increases were realized more successfully for the multiple price increases in 2008 than in the following years.

(c) In many cases, the GB producers achieved an average price increase of more than half of the announced price—with Lafarge and Cemex being the most successful in this.

(d) The GB cement producers were generally not able to realize the full announced price increase. In a small number of examples, the full, or an even greater, price increase was realized. In other cases, there was no increase in realised prices.¹⁰⁹

7.208 The limitations to our analysis are described in Appendix 7.11.

7.209 The GB cement producers told us that, since prices were negotiated individually with customers, there was dispersion and uncertainty in realized price increases. The GB producers argued that, as a consequence, an announced increase provided no information about individual customers' increases, and dispersion would therefore undermine any coordinating function price increase letters might otherwise have served. In response to these submissions from the GB producers, we analysed the dispersion in realized price increases.

7.210 The methodology and results of our analysis of dispersion in realized price increases are set out in Appendix 7.11. We found that:

(a) The degree of dispersion varied between announcements rounds. On some occasions, most price increases were close to the announced price increase. On other occasions, customers faced a range of price increases. On other occasions yet, there was little dispersion but increases did not cluster around the announced

¹⁰⁷ Where a customer collects cement directly from the producer, delivered prices are equivalent to ex-works prices, and are included in the analysis. Collected sales are a small proportion of each Major's total sales.

¹⁰⁸ Using all external sales, rather than external sales to independents, did not alter our conclusions.

¹⁰⁹ Hanson noted that the degree of success in increasing the price in any given round of announcements could well vary across the GB producers.

increase. This suggests that announced price increases do not, on their own, provide clear information about each individual customer's price increase.

- (b) Announcements made by a single GB cement producer, or a subset of GB cement producers, appeared to be less successful than when all firms made announcements that became effective in the same month. This suggests that all GB cement producers' price increase announcements becoming effective at the same time facilitates price increases.¹¹⁰

Summary: price announcement letters

7.211 We found that:

- (a) In many, but not all, instances, Lafarge was the first to announce a price increase, and was then followed by the other GB producers which announced similar increases.
- (b) The GB cement producers were generally not able to realize the full announced price increase. However, in many cases, the GB producers achieved an average price increase of more than half of the announced price.
- (c) Announced price increases did not, on their own, provide clear information about each individual customer's price increase. However, all GB cement producers' price increase announcements becoming effective at the same time appeared to facilitate price increases.

Price parallelism

7.212 In this subsection, we explore the relationships between the GB cement producers' prices for bulk cement and between the GB cement producers' prices and the prices of cement importers for which data was available. We undertook this analysis to understand the extent of parallelism in prices and the degree to which price announcement letters (see paragraphs 7.189 to 7.211) might be serving as a mechanism that contributes to increased transparency in the magnitude, direction and timing of price changes. If some or all of the GB producers coordinate, we could expect a high degree of correlation between their prices. This would be particularly the case if the focal point for coordination were prices, or if there were some patterns of price leadership/price following in the industry (eg through price announcement letters).¹¹¹ A high degree of correlation between prices would also be consistent with intense competition; for instance, if prices increase in the same way due to common cost shocks.

¹¹⁰ Cemex told us in its [response to our provisional findings](#) (paragraph 7.52) that our finding that price announcements being made at the same time made them more effective in increasing realized prices was distorted by the mid-2008 price increase, and prices were increased in order to account for the very large increase in energy prices at that time. However, as set out in Appendix 7.11, our finding was based on an analysis of several rounds of price announcements, including the price increases that became effective in January 2008 and January 2009.

¹¹¹ Cemex submitted in its [response to our provisional findings](#) (paragraph 7.53) that, contrary to our views, there was no parallelism in price announcements, nor was there any leadership of announcements by Lafarge. Cemex argued that therefore there could be no causal link between any price parallelism and price announcements. However, as set out in paragraph 7.199, Lafarge was the first to announce price increases in the earlier years of our analysis, and, due to regulatory scrutiny in subsequent years, we put more weight on the pre-2010 pattern of price announcements. Even absent Lafarge being the first to announce an increase, we found that there was still parallelism in price announcements in many cases in the sense that all producers announced similar increases to take effect on the same date. In our view, it is not necessary that the same firm always leads price announcement rounds; what matters is that there is sequencing of price announcements. Price announcements are therefore able to facilitate overall price parallelism in a market with price dispersion by signalling the general magnitude of desired price increases.

7.213 The GB producers told us that the reason for their announced price increases over the last few years had been increases in their costs. In particular, we were told by Hanson that it sent general price increase notifications to customers in order to attempt to recover its cost increases (eg energy costs which had risen substantially in recent years). Tarmac told us that, to the extent that there had been any correlation in terms of timing and the magnitude of increases sought in the price letters sent by the different cement producers, this could be explained by the need for GB producers (a) to respond to customer requests for customers' own budgeting/costing purposes and (b) to address their increased input costs (which were common to all producers) annually or, in more exceptional circumstances, as they could no longer continue to be absorbed. Lafarge told us that price increases were driven by a mixture of costs including the price of coal, oil and sea freight costs.

7.214 We noted that it would not be possible to draw conclusions about the effectiveness of competition in the GB cement markets from the results of our price parallelism analysis in isolation.

7.215 We compare:

- (a) prices between the GB producers to understand the extent to which their prices may be correlated with each other; and
- (b) the GB producers' prices with those of a number of cement importers for whom data was available (Aggregate Industries, [Importer A], [Importer B] and [Importer C]).

Data and methodology

7.216 Details of how we conducted our analysis are set out in Appendix 7.12, including a description of the data and methodology we used. In particular:

- (a) We excluded from this analysis data on bagged cement (since we found bagged cement to be in a separate economic market from bulk cement) and on plant-to-plant transfers of bulk cement (since these did not provide information on the market price for cement).
- (b) We focused on delivered prices of bulk CEM I sold to non-Major customers, in order for the prices to be directly comparable across GB producers and importers. This was because:
 - (i) CEM I makes up the majority of the GB producers' sales, as well as being an input into non-CEM I products. The cement importers supply only CEM I. Therefore we considered that it was appropriate to look at CEM I separately.
 - (ii) Sales to other GB producers and internal sales were excluded from the analysis because internal transfer price may not necessarily reflect market prices.¹¹² Sales to other GB producers may also not reflect market prices in certain circumstances (see paragraph 7.229).

¹¹² Whilst we did not conclude that cement was being transferred internally at non-market prices, by excluding internal transfers from our analysis, any internal transfers at non-market prices could not affect the results of our analysis.

Correlations between the Majors', and Majors' and importers', prices

- 7.217 We explored the extent of correlation between the GB producers' quarterly delivered prices for CEM I, and between the GB producers' and importers' quarterly CEM I prices. We also explored the extent of correlation between the GB producers' monthly delivered prices.
- 7.218 The results of these correlation analyses are set out in Appendix 7.12. We found that the correlations between the GB producers' CEM I quarterly prices produce high correlation coefficients,¹¹³ ranging from 87 to 98 per cent. Correlations between the GB producers' and [Importer A's], [Importer B's] and [Importer C's] quarterly prices also produced high correlation coefficients, ranging from 82 to 98 per cent, while correlations between [Importer A's], [Importer B's] and [Importer C's] prices produced correlation coefficients ranging from 92 to 98 per cent. This suggests that the GB producers' and [Importer A's], [Importer B's] and [Importer C's] prices are closely aligned over time. Correlations between Aggregate Industries' prices and the GB producers' prices, and between Aggregate Industries' prices and [Importer A's], [Importer B's] and [Importer C's] prices produce lower correlation coefficients, at 57 to 74 per cent and 53 to 68 per cent respectively.
- 7.219 When we undertook our correlation analysis using monthly rather than quarterly average CEM I prices for the GB producers, the results remain very similar, with the correlations between the GB producers' CEM I monthly prices ranging from 86 to 97 per cent.
- 7.220 We see from the charts in Appendix 7.12 that the average quarterly prices for all GB producers and importers displayed an upward trend over the period in question. Therefore, we also calculated correlations between 'detrended' differences in quarterly prices, in order to remove any correlation impacts driven purely by trend. Further details of our methodology for this detrending analysis, and the results of the analysis, are provided in Appendix 7.12.
- 7.221 As shown in Appendix 7.12, there is high correlation between Cemex's, Hanson's and Lafarge's quarterly detrended price difference series (ranging between [70–95] per cent), which is independent of trend in the actual price series. The correlations between Tarmac's and other GB producers' detrended price difference series are lower, ranging between [50–60] per cent.¹¹⁴
- 7.222 As also shown in Appendix 7.12, the correlations between the GB producers' and importers' quarterly detrended price difference series show greater variation. [Importer A]'s and [Importer B]'s detrended price difference series show higher correlations with Cemex's, Hanson's and Lafarge's detrended price difference series ([70–90] per cent), and somewhat lower with Tarmac's detrended price difference series ([40–65] per cent). [Importer C]'s detrended price difference series, on the other hand, shows lower correlations with all Majors' detrended price difference series, ranging from [25–45] per cent.
- 7.223 We concluded from our analysis of cement price correlations that:

¹¹³A correlation coefficient is a single number that describes the degree of relationship between two variables. Correlation coefficients range between –100 per cent and 100 per cent. The closer the correlation coefficient is to 100 per cent, the more changes in one variable (eg costs) are associated with changes of the same sign in the other variable (eg price). The closer the correlation coefficient is to –100 per cent, then the more changes in one variable are associated with opposite changes in the other variable. It is not unusual for time series (eg prices) to have high (positive) correlation coefficients.

¹¹⁴We note that Tarmac's sales to external customers are relatively low, and that Tarmac told us that it made external sales only where the margin available was high enough to compensate it for having to source additional volumes externally.

- (a) Price correlation among three GB producers (Cemex, Hanson and Lafarge) has been very high in the period Q1 2007 to Q4 2011, even when controlling for trend.
- (b) Price correlation between Tarmac and the other GB producers is in line with the correlations for the other GB producers when not controlling for trend but are much lower across the period, when controlling for trend.
- (c) Price correlation has been high between the GB producers and two importers ([Importer A] and [Importer B]), and lower between the GB producers and [Importer C], in the period Q1 2007 to Q4 2011.

Cross-sales

7.224 We analysed the extent to which the Majors bought cement from and sold cement to each other (which we termed 'cross-sales').¹¹⁵

7.225 We assessed cross-sales as part of our analysis of the coordination theory of harm for cement. There are several possible ways in which cross-sales may facilitate coordination. The existence of customer/supplier relations between the Majors may facilitate information exchange between the Majors and contribute to increased transparency in prices of cement. Cross-sales may also be a tool used by the Majors to signal to each other, or a mechanism by which the Majors can punish each other. In particular, existence of (non-negligible) cross-sales makes repatriation¹¹⁶ between the Majors possible. Repatriation can be used, on a smaller scale, as a signal that a deviation from any coordinated outcome has been detected, or, on a larger scale, as a punishment for each of the other Majors with which there are cross-sales relationships, if deviation occurs. Finally, cross-sales could also be used as a tool for side-payments between the Majors.

7.226 We were told by the Majors that there were three main reasons that the Majors purchased cement from each other:

- (a) if a producer of cement had a shortfall of inputs in a particular location—Lafarge told us that these types of cross-sales were usually supplied as a matter of short-term expediency during product shortages in periods of high demand;
- (b) for logistical reasons, where there were transport cost savings to be made, ie when a Major's RMX or other concrete operation was located closer to a competitor's cement plant, it might be cheaper to source from the competitors' plant rather than from its own plant (or, in the case of Aggregates Industries, its own import terminal); and
- (c) when a producer of cement did not have the capacity to self-supply its RMX operations.^{117, 118}

¹¹⁵ Lafarge told us that it did not consider transactions with other Majors to be cross-sales arrangements or agreements, and that it considered that use of the term 'cross-sale' denoted some form of conditionality between the transactions. Aggregate Industries also told us that it made no cross-sales of cement, where cross-sales were defined as sales dependent upon reciprocal supply. For the purposes of our analysis, we term all sales and purchases between Majors 'cross-sales'.

¹¹⁶ Repatriation occurs when a cement producer brings cement volumes purchased from another producer back into in-house supply.

¹¹⁷ Tarmac told us that it was a net buyer of cement as it required more than it could self-supply, and it purchased from other Majors where this led to efficiencies associated with savings on transport costs.

¹¹⁸ Cemex told us that cross-sales agreements were entered into for rational business reasons including: (a) making up for a shortfall of input in a particular location, (b) in order to save transport costs, and (c) in order to supply a Major's RMX operations.

- 7.227 We analysed the evidence on cross-sales of cement, and in particular:
- (a) for each of the Majors, which cement suppliers it purchased cement from and sold cement to;
 - (b) how cross-sales of cement balanced out between the Majors, and which Majors were net purchasers/net sellers of cement;
 - (c) the average prices paid for cement by the Majors to each other, and how this compared with the average prices paid for cement by non-Major customers to the Majors; and
 - (d) whether there had been any trends in cross-sales over time.
- 7.228 The details of our methodology and the results of our analysis are in Appendix 7.13. We found that:
- (a) the Majors had historically bought and sold significant amounts of cement from each other;
 - (b) Cemex, Hanson and Lafarge appeared to be predominantly net sellers of cement, while Tarmac and Aggregate Industries were net buyers across the period 2007 to 2011 (2008 to 2011 in the case of Aggregate Industries);
 - (c) there were in some cases significant variations in the prices charged to each Major, with [redacted]; while [redacted] Majors often paid higher prices than non-Majors; and
 - (d) there had been a shift in the Majors' purchases from each other over the period 2007 to 2011 towards greater self-supply, apart from in areas where logistics implied that purchases from other Majors might be more economical.
- 7.229 We noted that, as set out in the previous paragraphs, when purchasing cement from other Majors, Majors often paid higher prices than non-Majors. We therefore calculated the 'implied revenue differential' of these prices, ie the difference between the revenue a Major would have received for cross-sales to other Majors had the seller used the prices it charged to its non-Major customers (which we call hypothetical revenue) from its actual revenue for cross-sales to other Majors. The details of our analysis are in Appendix 7.13. We found that the implied revenue differentials were not large and did not display any regular patterns, ie the results of this analysis were not consistent with the use of cross-sales for side payments between the Majors.

Analysis of internalization of cement purchases by Hanson in 2009

- 7.230 Our analysis of the patterns in cross-sales of cement between the Majors over time showed that, in early 2009, Hanson switched very large volumes of cement purchases for its downstream businesses from Lafarge to in-house sourcing ('the 2009 internalization event'). We studied this significant change in cross-sale arrangements for the same reasons that we analysed cross-sales more generally (see paragraph 7.225), namely as part of our analysis of the coordination theory of harm.
- 7.231 In late 2007, Hanson (predominantly an aggregates and RMX/concrete block producer with no cement production) was acquired by Heidelberg (the owner of Castle Cement since 1998), giving Hanson cement production capacity in Great Britain. In early 2009, as a result of this acquisition, Hanson internalized most of its cement purchases. Hanson had previously bought cement from Lafarge (about [redacted] kt in

2008), and it was by far Lafarge's largest customer in 2008, accounting for [X] per cent of Lafarge's total sales of cement. In 2009, Hanson's purchases of cement from Lafarge reduced to about [X] kt.

7.232 However, despite this large switch over a short period of time, the GB cement production shares held by Hanson (formerly Castle) and Lafarge appeared to remain relatively stable in 2009—with the large gain to Hanson from internalization being offset by Hanson losing many external cement sales. In particular, while in January 2009 there was a large swing downward in Lafarge's share of the GB market and a large swing upward for Hanson, within a few months these changes were partially compensated. Although Lafarge's share reduced year on year between 2008 and 2009, Hanson's share remained relatively stable, suggesting that, to the extent that Lafarge lost share in 2009, this was not to Hanson:

- (a) Lafarge decided to self-supply a large volume of its own cementitious purchases from Hanson in 2009 (around [X] kt reduction in cementitious purchases from Hanson, of which [X] kt were cement purchases and [X] kt were GGBS purchases);
- (b) [two other Majors] reduced their purchases of cement from Hanson and switched some of these purchases to Lafarge in 2009; and
- (c) Hanson also lost to Lafarge (on a net basis¹¹⁹) a relatively large volume of cement sales to independent customers (both bulk and bagged) in 2009.

7.233 We asked the Majors for information on the rationale for their switching/internalizing decisions in 2009, as well as copies of their internal documents in relation to these decisions, and for copies of correspondence with customers (in the case of Hanson and Lafarge) and correspondence with other Majors (in the case of Hanson, Lafarge, [and the two other Majors that switched cement purchases to Lafarge in 2009]) at the time of the internalization event.¹²⁰ We also gathered evidence from four independent customers who switched at the time.

7.234 Our analysis of the evidence we received on the 2009 internalization event is in Appendix 7.14. We first explored the evidence on Hanson's rationale for internalization. We then organized the evidence on the relationship between Hanson and Lafarge into a 'timeline' covering the period following the decision to internalize and examined how the relationship subsequently evolved. We next looked at the evidence on Lafarge's response to the internalization event. Finally, we analysed the correspondence between Hanson and Lafarge and the customers who switched between them in 2009, as well as the evidence from our interviews with customers who switched between them in 2009.

7.235 Our analysis of the 2009 internalization event is in Appendix 7.14. Overall, our review of the internal documents, the correspondence between the Majors, and between the Majors and their customers and our discussions with customers suggested that:

- (a) There was a breakdown in the customer/supplier relationship between Hanson and Lafarge in autumn 2008. Hanson communicated to Lafarge its intention to internalize [around one-third] out of the total [X] kt of cement that it was purchas-

¹¹⁹ Hanson told us in paragraph 8.45.4 of its [response to provisional findings](#) that it won a considerable number of customers from Lafarge in 2009, contradicting our view that 2009 was a period characterized by Lafarge's 'punishment' of Hanson following Hanson's large internalization. However, our argument is that Hanson lost external volumes to Lafarge on a *net* basis.

¹²⁰ We did not request any documents from [the remaining Major] as it did not appear to have switched cement purchases from Lafarge to Hanson at the time.

ing from Lafarge around September 2008. Lafarge then responded by attempting to renegotiate the terms of supply with Hanson, which included possible increases in prices to Hanson or reductions in rebates to Hanson for 2009 to reflect a reduction in the volumes purchased by Hanson. The failure to come to any agreement on prices resulted in Hanson indicating to Lafarge that it (Hanson) would in January 2009 commence self-supply of all cement purchases from Lafarge, and in January 2009 Hanson internalized all cement purchases from Lafarge. Around February/March 2009, Hanson and Lafarge came to an agreement for Lafarge to start supplying part of Hanson's RMX business again (Hanson RMX and concrete in the South-West), although at much lower volumes than had initially been planned ([around one-quarter] that Hanson had intended to continue purchasing from Lafarge in 2009).

- (b) It appears that Lafarge's answer to Hanson's internalization plans was: first, to try to mitigate the amount internalized and try to influence the location of RMX plants for which Hanson would continue to rely on Lafarge cement supplies so as to cease supplying the Hanson sites that were least profitable for Lafarge to supply (which were those most expensive to supply because of their distance from Lafarge cement plants). When this failed, our review of Lafarge's internal documents suggested that Lafarge attempted to recover any lost volume from Hanson by targeting Hanson-supplied customers [REDACTED].
- (c) Lafarge initially told us that it did not specifically target Hanson customers in its efforts to recoup lost volumes after the 2009 internalization by Hanson, and provided data showing that, in 2009, Lafarge had won customers from all Majors, not just Hanson. However, if we include bagged customers as well as volumes from other Majors, we find that in 2009, following the internalization, a very large proportion of the cement volumes won by Lafarge were of customers previously supplied by Hanson, and the proportion of cement volumes won from Hanson was higher than that implied by market shares. Whilst we accept that, because Hanson accounted for a large proportion of cement sales to independent customers in 2009, it was to some extent inevitable that Lafarge would win large volumes from Hanson in seeking to recoup lost volumes. However, there was clear evidence from the internal documents that Lafarge deliberately targeted Hanson customers during this period and that Lafarge specifically tracked its share against Hanson's while it was attempting to recoup volumes. In addition, Lafarge subsequently told us that its initial reaction to Hanson's internalization was not entirely rational and involved the specific targeting of Hanson customers. Lafarge explained that Hanson was Lafarge's largest customer and also had the largest and easiest customers for Lafarge to target. Lafarge said that Lafarge's apparent targeting of Hanson's customers was because Hanson's independent customers were considering, following Hanson's internalization, whether Hanson remained able to provide the same security of supply as previously. However, there is no evidence in the internal documents of customers expressing concerns about security of supply if they were to remain with Hanson, nor is there contemporaneous evidence of Lafarge considering this to be a reason for targeting Hanson customers preferentially.
- (d) The internal documentary evidence suggests that Lafarge may have been quite aggressive in its negotiations with some of Hanson's key customers, in particular [REDACTED] and [REDACTED]. The Hanson internal documents suggest that Hanson may not have fully anticipated Lafarge's reaction—Hanson announced some very large price increases for January 2009 (£1.20 more than Lafarge), but was confronted with resistance to this increase from some key customers who had been approached by Lafarge. Around March/April 2009, however, Hanson seemed to be very

aware of the situation and appeared to try harder to defend existing business against Lafarge (and even regain some lost customers).

(e) We also reviewed internal documents relating to the switch by the other Majors [X]. Hanson negotiated a price to supply cement to [X] for 2009, and, less than one month after formalizing the offer, Hanson announced an increase of [X] per cent on the price that had been agreed. [X], though we note that Hanson subsequently revised the price [X] to [X].

(f) In summary, it appeared that:

- Whilst Lafarge internalized cement purchases from several cement producers, it preferentially internalized its cement purchases from Hanson (ie it internalized all its cement purchases from Hanson, whereas it only partly internalized its other cement purchases).
- Lafarge appeared to have targeted Hanson's customers (out of proportion to Hanson's share of the market) rather than trying to recover these volumes equally from all its rivals. Specifically targeting Hanson's customers in this way may have been suboptimal for Lafarge, as Lafarge could instead have sought to gain customers—regardless of their existing supplier—which were most profitable for Lafarge to serve (eg customers closest to Lafarge's cement plants). These events are consistent with Lafarge taking rebalancing action against Hanson (and/or Lafarge targeting only Hanson's customers to avoid the risk of being the subject of rebalancing action from the other cement producers) with stability of market shares as the goal for Lafarge.
- The average prices for cement charged by both Hanson and Lafarge increased very substantially in early 2009 (and in fact announced price increases across the industry for 2009 were generally very high),¹²¹ although there was some erosion of Hanson's and Lafarge's average prices from around April 2009. By December 2009, Hanson's average prices of CEM I to independents had returned to their level as at the end of 2008, whereas Lafarge's average prices of CEM I to independents had reduced compared with their levels of early 2009, but remained above their levels as at the end of 2008 (see Appendix 7.12). There may therefore be some evidence of a 'price war' between Hanson and Lafarge in 2009, though we note that the impact on prices was only to reduce prices compared with their peak levels of Q1 2009. This may indicate that any price-cutting behaviour can be targeted fairly precisely in the cement industry (ie only those customers targeted by Lafarge benefited from Lafarge's reaction to Hanson's internalization).

7.236 Therefore, the internal documents suggest that late 2008 and early 2009 was a period where the negotiations between Hanson and Lafarge did not succeed, and that Lafarge responded to the internalization by attempting to regain equivalent volumes to those it had lost from Hanson-supplied customers. While we would expect Lafarge to attempt to recoup volumes when it lost a large customer in a competitive market, the fact that Lafarge appears to have targeted Hanson customers (rather than attempting to gain customers from Cemex and Tarmac, for instance) could suggest that Lafarge was either trying to take rebalancing action against Hanson, and/or that stability of market shares in the cement industry was a concern. Targeting specifically Hanson customers may also have been 'sub-optimal' for Lafarge: Lafarge

¹²¹ The GB cement producers told us that the high price increases in early 2009 were a consequence of large increases in input costs in 2008.

could have sought to gain customers which were most profitable for Lafarge (closest to its plants, for instance), but this does not appear to have been the strategy that Lafarge adopted.

- 7.237 The internal documents reviewed do not in general suggest that Hanson voluntarily let go of some customers to compensate Lafarge for the loss in volume¹²². Rather, the documents suggest that Lafarge specifically targeted certain Hanson customers and competed harder than it may have done previously with Hanson on prices to gain these customers, though it does appear that Hanson may have underestimated the strength of Lafarge's response to its internalization. The fact that Hanson announced a large price increase for 2009 compared with Lafarge (with a wider gap between their price increases than in previous years) may also have contributed to Lafarge gaining cement customers from Hanson in early 2009.
- 7.238 The review of the internal documents relating to the 2009 internalization event also shed light on other aspects of our competitive assessment. In particular, these documents suggest that Hanson and Lafarge had a very high awareness of each other's actions (eg who was buying from whom, who was talking to whom) and that they monitored customer switching and information they obtained from customers on the cement prices charged by other Majors. Many documents also suggested that there was a large degree of interdependence in Hanson's and Lafarge's competitive behaviour, ie that they took into account each other's anticipated reaction in taking decisions on pricing. Finally, the documents suggested that maintaining market share was a key objective for Hanson and Lafarge.

Cement: impact of recent market developments

- 7.239 We considered the impact on our competitive assessment of the GB cement markets of three key market developments in 2013 because these developments had the potential to affect competition in these markets and were not otherwise taken into account in our analysis (see paragraphs 4.35 to 4.37). These three market developments were:
- (a) the formation of Lafarge Tarmac as a result of the Anglo–Lafarge JV;
 - (b) the formation of HCM and its entry into the GB cement markets using assets formerly owned by Lafarge; and
 - (c) the acquisition by CRH of additional GB cement import terminals from other importers of cement into GB.
- 7.240 Further details regarding the background to these market developments are in Appendices 3.1 and 7.15.
- 7.241 We examined the impact of these market developments on GB cement market shares. Tables 7.15 and 7.16 below show the total clinker capacity and total clinker capacity shares for GB cement production before and after the creation of Lafarge Tarmac and HCM based on 2012 figures.¹²³ Lafarge Tarmac total clinker capacity share is lower than that of Lafarge and Tarmac taken together prior to the formation of the JV, because the cement plant that was divested to HCM (Lafarge's Hope plant)

¹²² In its [response to provisional findings](#), Hanson reiterated this point and said that, in its view, Hanson's move to internalize was followed (whether inspired by Hanson's move or not) by similar internalization moves by other GB producers, leading to a reduction in cross-sales interdependence across the industry. We consider the implications of reductions in cross-sales over time in paragraphs 8.296 & 8.297.

¹²³ CRH is not included in these tables as it has no GB cement production capacity.

had higher clinker capacity than Tarmac's Tunstead plant which was taken into Lafarge Tarmac alongside Lafarge's other cement plants.

TABLE 7.15 **GB clinker capacity and capacity shares 2011**

	<i>Lafarge</i>	<i>Hanson</i>	<i>Cemex</i>	<i>Tarmac*</i>
Total clinker capacity (tonnes)	[⊗]	[⊗]	[⊗]	[⊗]
Shares of GB clinker capacity pre-JV (%)	[45–50]	[20–25]	[20–25]	[10–15]

Source: CC.

*For Tarmac, this is cement capacity rather than clinker capacity, based on our estimates of achievable capacity rather than nameplate capacity.

TABLE 7.16 **Clinker capacity and capacity shares after the formation of Lafarge Tarmac JV and HCM**

	<i>Lafarge Tarmac*</i>	<i>Hanson</i>	<i>Cemex</i>	<i>HCM</i>
Total clinker capacity (tonnes)	[⊗]	[⊗]	[⊗]	[⊗]
Share of GB clinker capacity (%)	[35–40]	[20–25]	[20–25]	[15–20]

Source: CC.

*For Lafarge Tarmac's Tunstead plant, this is cement capacity rather than clinker capacity, based on our estimates of achievable capacity rather than nameplate capacity. This may therefore slightly overestimate the total clinker capacity of Lafarge Tarmac.

7.242 By assuming that the total volumes of cement produced from each plant remain the same after the creation of Lafarge Tarmac and HCM, we were able to estimate possible future market shares for GB cement production. This is shown in Tables 7.17 and 7.18, again based on 2011 figures.

TABLE 7.17 **Total production of cement in 2011 and shares of GB production**

	<i>Lafarge</i>	<i>Hanson</i>	<i>Cemex</i>	<i>Tarmac</i>
Total cement production pre-JV	[⊗]	[⊗]	[⊗]	[⊗]
Shares of GB production (%)	43	23	24	10

Source: CC.

TABLE 7.18 **Total production of cement and shares of production post-JV and MI entry, assuming constant production by plant**

	<i>Lafarge Tarmac JV</i>	<i>Hanson</i>	<i>Cemex</i>	<i>HCM</i>
Total cement production post-JV	[⊗]	[⊗]	[⊗]	[⊗]
Shares of GB production (%)	37	23	24	16

Source: CC.

7.243 Following the formation of Lafarge Tarmac and HCM, there was no overall increase in concentration of the UK bulk cement market. There remain four major UK-based cement producers and some competition from imports.¹²⁴ If HCM runs the Hope plant at, or near to, its capacity, then market concentration may be expected to decrease on some commonly-used indicators—for example, the three-firm concentration ratio.

¹²⁴ The supply of imported cement may become slightly more concentrated as a result of CRH's recent cement import terminal acquisitions. However, as CRH acquired its new cement import terminals from other importers, there is no change in overall cement import capacity into GB as a result of these acquisitions.

- 7.244 There will be some changes to the vertical structure of two of the four GB cement producers. Compared with Lafarge before the JV, Lafarge Tarmac has a significantly larger aggregates business (see paragraph 6.113), [redacted] less cement capacity (because the divested Hope plant is larger than Tarmac's Tunstead plant, albeit the Tunstead plant has greater scope for longer-term expansion than Hope) and a similar sized RMX network (see paragraph 9.64). Compared with Tarmac before the JV, HCM has a much smaller aggregates business (see paragraph 6.113), [redacted] more cement capacity and a similar-sized RMX network (see paragraph 9.64). Lafarge Tarmac, like Lafarge today, has a significantly lower ratio of cement use to production than Cemex and Hanson. Conversely, HCM has a higher ratio of cement use to production than Cemex and Hanson, though the difference is not as pronounced as for Tarmac pre-JV, in part because HCM operates a larger cement plant than Tarmac did.
- 7.245 A summary of the views of Majors on the impact of these market developments is in Appendix 7.15.
- 7.246 To inform our consideration of the impact of these market developments, we reviewed evidence from Majors and other parties, including HCM's business plans (see Appendix 7.15). We also developed some possible scenarios as to how Lafarge Tarmac and HCM might decide to compete following their formation. Given the relatively small scale of the aggregates operations of HCM, we concentrated on assessing competition in the supply of cement, rather than aggregates or RMX.
- 7.247 Looking first at Lafarge Tarmac, we noted that its operations and employees were drawn from both Lafarge and Tarmac, that it had a stronger market position in aggregates than either Lafarge or Tarmac, and that it was likely to seek to exploit some synergies from the combination of Lafarge and Tarmac. However, we also noted that its market positions in cement and RMX were broadly similar to those of Lafarge. Lafarge Tarmac, Cemex and Hanson argued that the structure and incentives of Lafarge Tarmac differed from those of Lafarge and Tarmac for a number of reasons, including because Lafarge Tarmac's variable costs of production would be substantially reduced compared with those of its predecessors. We consider these arguments in more detail in paragraphs 8.358 to 8.367.
- 7.248 In relation to HCM, as noted above, we reviewed its initial business plans, for the five years following its creation, although we were also mindful that these plans might be subject to change in the light of experience as the new company's owners and management developed their view about the strengths and weaknesses of HCM's operations and about their strategic options in the markets in which they participate.
- 7.249 HCM will be quite similar to Tarmac prior to January 2013, in terms of its market position in cement and RMX, but will have a significantly smaller aggregates business and some additional cement capacity: HCM's clinker capacity is around [redacted] kt compared with Tarmac's [redacted] kt. Some of the Majors told us that they expected HCM to adopt a different competitive stance in the market compared with Tarmac's prior to the JV as HCM would have a 'longer' position in cement than was the case of Tarmac (see the summary of the Majors' views in Appendix 7.15). We considered three possible scenarios for HCM's future behaviour as part of our competitive assessment of the GB cement markets (see paragraph 8.368).
- 7.250 Our assessment of the impact of CRH's recent acquisition of additional cement import terminals is in paragraphs 8.351 to 8.357.

GGBS supply chain

7.251 We next present evidence on and our analysis of the GGBS supply chain. We look at the following aspects of the GGBS supply chain:

- (a) GGBS production process;
- (b) market shares and imports;
- (c) capacity for GGBS production;
- (d) GGBS customers;
- (e) GGBS profitability, prices and margins;
- (f) pricing of GGBS;
- (g) contractual arrangements for the supply of GBS and GGBS; and
- (h) internal documentary evidence on GGBS.

GGBS production process

7.252 GGBS is produced as a by-product of the steel industry. The process of the production of GGBS is the following:

- (a) The slag that comes out of the iron blast furnace can be air-cooled (in which case it has no cementitious properties and can just be used as an aggregate).
- (b) The slag can (with considerable investment in equipment) also be water-cooled, which makes a cementitious granulate material (GBS).
- (c) It is this water-cooled cementitious material which can be ground to make GGBS, after investment in GGBS grinding equipment.

7.253 There are three integrated steelworks in operation in GB: the Port Talbot steelworks in South Wales, and the Scunthorpe steelworks in Lincolnshire, which are both owned by Tata Steel; and the Teesside steelworks in North Yorkshire, which reopened in April 2012 and is owned by SSI.

7.254 Lafarge Tarmac and the GB steel producers have entered agreements whereby Lafarge Tarmac currently has the exclusive rights and obligation to remove all slag produced including blast furnace slag from each of the three GB steelworks.¹²⁵ Lafarge Tarmac owns the equipment required to water-cool the slag so as to transform it into a cementitious granulate material (GBS). Lafarge Tarmac then sells GBS to Hanson under a series of exclusive long-term contracts, and Hanson undertakes the grinding to transform the GBS into GGBS. We present more details on the contractual arrangements between the GB steel producers and Lafarge Tarmac, and between Lafarge Tarmac and Hanson, in paragraphs 7.295 to 7.297 below.

¹²⁵ Tarmac told us that this included steel slag that could not be used to produce GBS.

7.255 Though our main focus is in analysing competition in GGBS, because of the production process described above where GBS is the key input into GGBS,¹²⁶ and because competition in GGBS is therefore likely to be directly affected by the supply agreements both upstream (for production of GBS from BFS) and downstream (for production of GGBS from GBS), our focus in this section is both on supply of GGBS and, where relevant, the supply of GBS for grinding into GGBS.¹²⁷

Market shares and imports

7.256 Our estimates of total production and imports of GGBS are presented in Table 7.19. Using this data, we also computed estimated market shares for the supply of GGBS in GB in Table 7.20. Total sales of GGBS were around 1.4 Mt in 2011, and have reduced between 2007 and 2011 by about 1 Mt.

TABLE 7.19 Estimated production and sales of GGBS in Great Britain, 2007 to 2011

	<i>tonnes</i>				
	2007	2008	2009	2010	2011
Hanson GGBS production	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Lafarge GGBS imports	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Cemex GGBS imports	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Aggregate Industries GGBS imports	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[An independent]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Others ([REDACTED])*	Unknown	Unknown	Unknown	Unknown	Unknown
Total known	2,496,615	2,104,973	1,382,930	1,291,595	1,418,039

Source: Hanson, Lafarge, Cemex, Aggregate Industries, [REDACTED].

*We understand this amount to be very small and it will have no substantial impact on the total.

TABLE 7.20 Estimated shares of supply of known GGBS volumes, 2007 to 2011

	<i>per cent</i>				
	2007	2008	2009	2010	2011
Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[An independent]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	100.0	100.0	100.0	100.0	100.0

Source: CC calculations based on Table 7.19.

7.257 Overall, the share of GB-supplied GGBS held by Hanson is very high—of the order of 84 to 94 per cent depending on the year. All other GGBS which is sold in GB is imported. We can see that imported GGBS accounted for between 10 and 15 per cent of sales of GGBS in GB for the years 2007 to 2011.

7.258 These estimates show that Hanson has increased its market share between 2007 and 2011, largely as a result of [REDACTED] having gradually ceased to import GGBS in 2009 and 2010. Although there is an increase in the share of supply of GGBS by [REDACTED] and [REDACTED] in 2011 through increased imports, their shares in absolute terms are very small.

¹²⁶ And conversely, GBS is manufactured almost exclusively (with the exception of Calumite) for use as an input into GGBS production.

¹²⁷ We note that we did not define a relevant market for GBS. This is because GBS is the key input to GGBS, which is manufactured almost exclusively (with the exception of Calumnite) for the sole purpose of producing GGBS and it has to be produced at the point that the slag is generated ie at the iron blastfurnace. Therefore we did not think it was necessary to define the relevant market for GBS.

Overall, the share of GB-supplied GGBS held by Hanson is very high—of the order of 84 to 94 per cent depending on the year. These estimates are in line with the estimates of GGBS market shares that we see in Hanson internal strategy documents where GGBS market shares are generally reported to be between 85 and 95 per cent depending on the year.

- 7.259 Our understanding is that Lafarge, Aggregate Industries and [REDACTED] are currently importing GGBS into GB. We understand that [REDACTED] recently ceased importing GGBS into GB—we do not have estimates for its imports of GGBS, but these were likely to be low. Cemex also used to import GGBS, but ceased in 2009:
- (a) Lafarge told us that it imported [REDACTED]. Lafarge told us that it used this GGBS to produce CEM III, and that the GGBS it imported could not be sold directly to RMX customers because the GGBS it imported was not compatible for direct use by RMX customers as it was not CE marked.
 - (b) Cemex told us that it purchased quantities of GGBS from Germany until 2009. [REDACTED]
 - (c) Aggregate Industries imports GGBS [REDACTED] from Holcim in Germany.
 - (d) [REDACTED] told us that it imported about [REDACTED] kt of GGBS per year through an import terminal located in [REDACTED]. The GGBS is sourced from [REDACTED], and [REDACTED] told us that it consumed all the GGBS it imported internally.
- 7.260 Regarding the profitability of importing GGBS, Lafarge told us that it bought GGBS from Hanson, but also imported GGBS from Spain, and that this was cheaper than buying GGBS domestically. It said that the volumes it imported were small, and were only for its own use. It told us that the GGBS that it purchased from Spain already had limestone in it, so it could not receive 'CE' marking and therefore Lafarge could not sell it in the UK. Lafarge said that it used all the GGBS it imported to produce CEM III which was compliant with all the relevant cement standards, which Lafarge then supplied mainly to its own RMX operations, but also to external customers. Lafarge told us that it was able to sell the RMX made from this GGBS in the UK as the RMX would have the 'CE' mark.¹²⁸ It said that it would not be cost-effective for its Spanish GGBS supplier to make GGBS without limestone in it specifically for Lafarge. Lafarge told us that its ability to import GGBS from Spain was largely due to the economic downturn in Spain. It said that, at the moment, there was good availability of cementitious materials. Lafarge also told us that the GGBS it imported was used to produce CEM II/III, but that its RMX businesses bought GGBS from Hanson.
- 7.261 As we set out in paragraph 5.91, the economics of transportation of GGBS are likely to be very similar to those of cement; if anything, transport costs may represent a larger proportion of the overall price of GGBS because GGBS is relatively cheaper than cement. As a result of the additional transport costs that importers need to incur compared with GB-produced GGBS, GGBS imports are likely to be at a significant cost disadvantage compared with GB-produced GGBS, and therefore are unlikely to be a strong constraint on domestically produced GGBS. Overall, GGBS imports only represent about 10 to 15 per cent of sales of GGBS in GB. In addition, we noted that most of the GGBS which is imported into GB is used for internal consumption, either

¹²⁸ Hanson told us that the Construction Products Regulation (EU) 305/2011 of 9 March 2011 made it mandatory from 1 July 2013 for manufacturers to apply CE marking to any product which was covered by a harmonized European standard such as GGBS (which is harmonized by European Standard EN 15167). Hanson said that this would allow Lafarge to use the cheaper imported GGBS from Spain not only for its own production, but also Lafarge would find it easier to resell Spanish 'CE' marked GGBS in the UK.

by importers' integrated downstream RMX operations or by importers' blending of GGBS with CEM I to produce CEM III. Therefore only part of the GGBS which is imported is available for purchase by independent RMX and concrete block producers.

- 7.262 Hanson told us, in its response to the Addendum to provisional findings, that imported GGBS was a viable option and acted as a further constraint on Hanson's conduct. It noted that the fact that imports were low today did not exclude the possibility that imports could flood into the market if the domestic GGBS price were to rise. Hanson quoted in support of this argument evidence from the European Commission's Heidelberg/Hanson merger decision, where it was found that GGBS imports into the UK had grown from virtually zero in 2001 to approximately [10–20] per cent in 2006.^{129,130}
- 7.263 However, as noted above, imports of GGBS are likely to be at a cost disadvantage compared with GB-produced GGBS. This would limit the competitive constraint from imports on GGBS prices in GB. In addition, we note that, in so far as imports constrain GB-produced GGBS, this is likely to be largely a consequence of the cellophane fallacy (related to the exercise of market power by Hanson) identified in paragraph 5.75.
- 7.264 Hanson also argued that our reasoning with respect to imports of GGBS was not consistent with our reasoning with respect to the effect of GGBS on cement prices. It argued that, on the one hand, we argued that GGBS imports of approximately 10 per cent of the market were insufficient to provide an effective constraint on GGBS prices; yet, on the other hand, we suggested that increasing the supply of GGBS, which itself only accounted for only around 10 per cent of the cementitious market, would have a significant effect on cement prices.¹³¹ However, we did not consider that this comparison was justified: the reason why we think that imports are unlikely to provide a strong constraint on Hanson's GGBS prices in GB is that GGBS importers are likely to have a significant cost disadvantage compared with Hanson (due to the additional transport costs they need to incur); such a cost disadvantage does not exist when comparing GB-produced GGBS and GB-produced cement: if anything, as set out in paragraph 5.81(b), Hanson argued that GGBS was cheaper to produce than cement.
- 7.265 Overall, we therefore found that imports of GGBS were not a strong competitive constraint on locally-produced GGBS, because of the cost disadvantage likely to be incurred by importers. This was consistent with the evidence of the low market share of imported GGBS in GB. We also noted that most of the GGBS which is imported is used for internal consumption and is not available for purchase by independent RMX and concrete block producers, which further limits the competitive constraint from imported GGBS on locally produced GGBS.

Capacity for GGBS production

- 7.266 We set out in this section our analysis of the capacity at each stage of the GGBS supply chain. We identify where constraints currently are, and consider ways in which

¹²⁹ Hanson told us that competition could be further increased if more GBS were imported and ground into GGBS in the UK. We note that there are no such imports and that this would require investment by an importer in GBS grinding equipment. Hanson [§]. We were told by Hanson that the higher quality of imported GBS led to savings in terms of time and energy, which offset any additional transport costs. However, Hanson did not provide evidence that the [§] would offset additional transport costs.

¹³⁰ Hanson told us that using imported GBS was particularly interesting in the context of HCM, since according to Hanson, ArcelorMittal had wide and unlimited access to BFS in countries well suited for export to GB, [§]. However, MI told us that [§].

¹³¹ [Hanson response to Addendum to provisional findings](#), paragraph 4.34.

these constraints could be relaxed. As we set out in paragraph 7.252, there are three main steps to the production of GGBS. Capacity for GGBS production will depend on:

- (a) production of slag that comes out of the iron blast furnaces, which in turn depends on steel production;
- (b) the capacity to water-cool the slag that comes out of the iron blast furnace to produce GBS or pellite; and
- (c) the capacity to grind GBS or pellite into GGBS.

7.267 Not all of the BFS that is produced can be channelled to the granulator or pelletizer to be water cooled for the production of GBS/pellite. In this regard, we have been told by Hanson and by Lafarge Tarmac of a number of technical and operational constraints:

- (a) The slag may not be of a suitable consistency to flow freely into the granulator. Lafarge Tarmac told us that this might happen at the start of the 'tapping' process, when the slag is tapped from the furnace, although SSI did not recognize this concern.
- (b) At the end of the tapping process, the flow of slag may be too rapid for the granulator or pelletizer to handle.
- (c) There may be insufficiently regular tapping of the blast furnace which could lead to air cooling, instead of granulation.
- (d) At the time at which the slag is tapped, the granulator or pelletizer may not be operational because it is undergoing maintenance or repairs, whether planned or unplanned.

7.268 We were told that the decision whether to channel slag to be water cooled or not lay entirely with the GB steel producers. The steel producers told us that this was subject to the operational and technical constraints mentioned above, and that they would channel as much of the BFS to the granulator or pelletizer as they could. Hanson told us that this decision could change on a daily basis, based purely on the requirements of the upstream iron production process and downstream steel production process.

7.269 Hanson told us that, in addition to the constraints mentioned above regarding the production of water-cooled slag, the channelling of some slag to a pelletizer, rather than to a granulator, further limited the availability of material suitable to produce GGBS. This is relevant to the slag produced at Teesside, where there exists one pelletizer and one granulator, and where slag to be water cooled is channelled by SSI employees to either the pelletizer or the granulator. Hanson told us that pellite—the output from cooling slag in the pelletizer—was less suitable for grinding into GGBS. It said that pellite required a pre-processing stage to screen large particles before it could be ground, and that substantial (non-temporary) alterations to Hanson's grinding machinery would be required. Hanson submitted that pellite could not be ground at Port Talbot or Purfleet, and that whilst it might be technically possible to grind it at Scunthorpe, this had not been established as a dependable industrial operation and so was not certain and would in all likelihood entail significant cost, though this was difficult to quantify. Hanson told us that it stopped using pellite when its Teesport grinding plant closed.¹³² It also told us that pellite had been used on occasion at

¹³² The closure of the Teesport grinding plant was linked to the closure of the blast furnace at Teesside.

Scunthorpe when there had been local shortages of GBS. Hanson added that pellite had never been used on its own in established production to produce GGBS; and that the effective blend rates used at Teesside, when that grinder was operational and grinding pellite, were 50:50 of pre-processed pellite and GBS. Hanson also told us that there were economically attractive uses of pellite developing outside the cementitious products market, and that it expected that the alternative uses would undermine the availability of pellite for grinding into GGBS. In this context, we note that under the terms of the GBS supply contracts Hanson has first call on the GBS produced (including pellite).

7.270 In our analysis of production constraints in the GGBS supply chain that is set out below, we considered that we ought not to exclude pellite as a suitable raw material for grinding into GGBS. We expect that, going forward, as production at Teesside recovers following the restarting of steel production in April 2012, and greater volumes of pellite are consequently produced, there will be a stronger case for Hanson to make any necessary investment (ie at Scunthorpe or as part of recommissioning Teesport) to be able to grind pellite into GGBS. Hanson did not submit evidence on the size of the investment that would be needed, but we note that Hanson told us that, in the past, it had ground pellite at Scunthorpe to resolve local shortages of GBS, which shows that Hanson has already had in the past some ability to grind pellite at Scunthorpe. In any case, we note that including pellite as a suitable material for grinding into GGBS has limited impact on the figures in the analysis below as (a) it only impacts on figures relating to the Teesside steelworks and GBS plants, (b) the Teesside steel plant was closed for 2011 and restarted production in April 2012 and so the contribution of this plant to industry output in these two years is relatively small; and (c) the share of slag that was transformed into pellite at Teesside was around 20 per cent (data extract sample taken during six-week production window in 2013).

7.271 We set out in Table 7.22 further below the capacity and production figures over recent years at the three stages of the GGBS supply chain: these relate to the production of water-cooled BFS, the production of GBS and pellite, and the production of GGBS. To compare capacity and production volumes across these three stages more easily, we have expressed all figures in terms of tonnes of GGBS-equivalent. For example, we report the capacity at the Port Talbot steel plant to be [redacted] Mt of GGBS-equivalent. This is to be interpreted to mean that if Port Talbot were to produce steel at maximum capacity, it would produce a certain volume of BFS that would be water cooled into GBS which, in turn, would produce [redacted] Mt of GGBS. Table 7.21 sets out the 'conversion rates' we used to express all figures in terms of GGBS-equivalent. The relevant conversion rates vary across steelworks and across GBS plants.

TABLE 7.21 Rates used to calculate GGBS-equivalent volumes

<i>Blast furnace slag produced from 1 tonne of steel</i>	
Port Talbot	[redacted] tonnes
Scunthorpe	[redacted] tonnes
Teesside	[redacted] tonnes
<i>Proportion of BFS that is channelled to GBS/pellite</i>	
Port Talbot	[redacted]
Scunthorpe	[redacted]
Teesside	[redacted]
GGBS produced from 1 tonne of GBS/pellite	0.9 tonnes

Source: CC, based on data from Hanson, Lafarge Tarmac, SSI and Tata Steel.

7.272 We noted earlier, as an example, that the capacity of the Port Talbot steel plant was [redacted] Mt of GGBS-equivalent. We estimated this by applying the relevant conversion rates above to that plant's steel capacity, which is [redacted] Mt of steel. The relevant conversion for Port Talbot is the following:

$$[\text{redacted}] \text{ Mt steel} * [\text{redacted}] \text{ tonnes of BFS/tonne of steel} * [\text{redacted}] \text{ tonnes of GBS or pelletite per tonne of BFS} * [\text{redacted}] \text{ tonnes of GGBS per tonne of GBS or pelletite} = [\text{redacted}] \text{ Mt.}$$

7.273 The proportions of BFS that are channelled to either the granulator or the pelletizer, and which range from 0.6 to 0.75 over the three steelworks, are based on historic proportions. They reflect the various operational and technical constraints related to water cooling that were discussed in paragraph 7.267.

TABLE 7.22 Capacity and production in the GGBS supply chain

	Capacity	2011 production	2012 production
<i>Steelworks—BFS to be water cooled (GGBS equiv, Mt)</i>			
Port Talbot	[redacted]	[redacted]	[redacted]
Scunthorpe	[redacted]	[redacted]	[redacted]
Teesside	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]
<i>GBS plants—GBS (GGBS equiv, Mt)*</i>			
Port Talbot	[redacted]	[redacted]	[redacted]
Scunthorpe	[redacted]	[redacted]	[redacted]
Teesside	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]
<i>GGBS plant—GGBS (GGBS, Mt)</i>			
Port Talbot	[redacted]	[redacted]	[redacted]
Scunthorpe	[redacted]	[redacted]	[redacted]
Purfleet*	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]
<i>Mothballed</i>			
Llanwern	[redacted]		
Teesport	[redacted]		
Total	[redacted]		

Source: Lafarge Tarmac and Hanson; CC calculations.

*Includes pelletite which is relevant to Teesside.

7.274 Hanson told us that whilst the mechanical capacity of its Purfleet plant was just under [redacted], the plant's capacity was restricted to [redacted] for operational reasons. In particular, Hanson said that there were logistical constraints in bringing GBS into the plant, due to limits on size and frequency of ships allowed in wharf, and in taking GGBS out of the plant, due to limits on the size of trucks allowed over the bridge via which GGBS left the plant. Hanson submitted that to relieve this constraint would cost time and money [£20–30 million in total]. For the purposes of this analysis, we have conservatively assumed the lower capacity figure for Purfleet, but note that the Purfleet plant itself does have the ability to grind [more GBS than] stated above.

7.275 We have been interested in understanding where there may be constraints and bottlenecks in the GGBS supply chain. Figure 7.1, based on Table 7.22, illustrates where the constraints are.

FIGURE 7.1

Capacity and production volumes in the GGBS supply chain



Source: Lafarge Tarmac and Hanson; CC calculations.

- 7.276 Figure 7.1 shows that in 2012, volumes of GGBS were in line with the volumes of GBS and pelletite produced. The same holds for 2011: production volumes of GGBS matched those of GBS closely.
- 7.277 Figure 7.1 suggests that, in 2011 and 2012, the existing capacities of GBS plants and of GGBS plants were not a constraint on the volumes of GGBS produced. Further, Figure 7.1 suggests that even if steelworks were to expand production to their maximum capacity, the existing capacity of GBS plants would be sufficient to accommodate the higher volumes. The existing GGBS plants would also be able to accommodate this provided the existing logistical constraints at Purfleet were resolved so that the plant could operate at its full grinding capacity or provided that either one of the currently mothballed plants at Llanwern and Teesport were reactivated.
- 7.278 In this light, we consider that increasing the volumes of GGBS available in GB could be achieved by one or more of the following routes:
- (a) Increasing the production of steel, and therefore of BFS that can be water cooled. Current levels of steel production could increase, leading to an additional 0.5 Mt of GGBS being produced. Going forward, we expect production of steel to increase from 2012 levels as production at Teesside in 2012 only started from April onwards, and because the blast furnace at Port Talbot was relined in 2012, disrupting production in that year (see also the expected 2013 and forecast 2014 steel production figures in Appendix 13.5, Annex E, paragraph 31). Production could also increase as a result of any upturn in demand for steel.
 - (b) Increasing the proportion of slag that is water cooled rather than air cooled. As explained in paragraph 7.273, the capacity figures for the steel plants presented in Table 7.22 drew on historic data about the proportion of slag that is water cooled, rather than air cooled. A higher share of water-cooled slag may be achievable, for example, by increasing the granulator or pelletizer (equipment) availability. Tata Steel told us that it aspired to water cool the maximum amount of slag possible; however, the current plant and equipment capability within which it operated restricted Tata Steel to water cooling 80 to 85 per cent of the slag. Measures to achieve incremental increases in output, such as more effective maintenance regimes for the granulator and/or pelletizer, might enable GBS output to increase. SSI suggested that increased GBS output could be achieved by ensuring high levels of existing equipment availability and/or investing in additional equipment (ie a second granulator/pelletizer) such that in the event that existing equipment were not available (for technical reasons), the process could be switched to the additional equipment. Both Tata Steel and SSI said that the investment needed would be significant.
 - (c) Increasing imports of GBS from abroad. Hanson currently imports some GBS from abroad into its Purfleet plant. At 2012 production levels, and assuming no upgrades to Purfleet or de-mothballing, there was around [✂] Mt of spare grinding capacity that could potentially be used to grind imported GBS.

(d) Transforming more of the domestically-produced GBS into GGBS. As shown in Table 7.22, in 2011 and 2012, the volume of GGBS produced by Hanson was broadly in line with the volume of GBS produced by Lafarge Tarmac. However, both Lafarge Tarmac and Hanson told us about the existence of GBS stockpiles—of about [less than 1] Mt in total (see Appendix 13.5, Annex F, for further details on the stockpiles). The existence of these stockpiles suggests that, in the past, Hanson did not transform all the GBS produced into GGBS.

7.279 We consider the further implications of our analysis of GGBS production capacity as part of our competitive assessment of the GGBS supply chain and analysis of remedies (see paragraphs 8.451 to 8.457 and 13.232 to 13.237).

GGBS customers

7.280 We obtained data from Hanson on its main customers for GGBS for the years from 2007 to 2011. Details of our analysis are set out in Appendix 7.6. We found that:

(a) [REDACTED]; and

(b) overall, sales of GGBS to Majors (including internal sales to Hanson and sales to Tarmac) accounted for the large majority of Hanson's sales in 2011, with sales to independent RMX and concrete producers only accounting for [REDACTED] per cent of Hanson's GGBS sales in 2011.

GBS and GGBS profitability and GGBS prices and margins

7.281 In this section, we present the results of our analysis of the profitability of Tarmac's (now Lafarge Tarmac's) GBS operations and Hanson's GGBS operations, along with our analysis of pricing and margins for GGBS.

7.282 Our analysis of the profitability of Lafarge Tarmac's GBS operations is presented in Appendix 7.17. We found that the returns on capital employed are broadly in line with the estimate of the GB cement producers' cost of capital that we had previously used when assessing the profitability of cement (10 per cent).¹³³

7.283 In contrast, our analysis of the profitability of Hanson's GGBS operations strongly supports a conclusion that Hanson is earning excess profits in GGBS. Table 7.23 shows our calculations of Hanson's return on capital employed on a current cost basis for the period 2007 to 2012. It can be seen that the return on capital, regardless of whether it is evaluated before or after impairment, is well in excess of the 10 per cent estimate of the relevant cost of capital for Hanson's GB GGBS activities. Further details of this profitability assessment can be found in Appendix 7.16.

¹³³ As we explain in the context of our analysis of cement profitability, the profitability of Lafarge Tarmac's GBS operations may have been adversely affected by the severe and prolonged economic downturn that occurred during the period covered by our analysis. However, unlike the GB cement producers' pricing of cement, Lafarge Tarmac has little freedom regarding the prices it receives for GBS by virtue of the contractual provisions described in paragraphs 7.295 & 7.296. Therefore there is no direct read across from our conclusions regarding Lafarge Tarmac's GBS profitability to our conclusions regarding the profitability of the GB cement producers' cement operations.

TABLE 7.23 Summary financial results for Hanson's GGBS activities on a current cost basis and calculation of ROCE thereon over the period 2007 to 2012

	<i>£ million for profits and capital employed/% for ROCE</i>						
	2007	2008	2009	2010	2011	2012	Average
<i>Profit and loss account</i>							
Profits before impairment	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Impairment	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Profits after impairment	[x]	[x]	[x]	[x]	[x]	[x]	[x]
<i>Balance sheet</i>							
Capital employed before impairment	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Capital employed after impairment	[x]	[x]	[x]	[x]	[x]	[x]	[x]
<i>ROCE</i>							
Before impact of impairment	[x]	[x]	[x]	[x]	[x]	[x]	[25–30]
After impact of impairment	[x]	[x]	[x]	[x]	[x]	[x]	[25–30]

Source: Appendix 7.16, Table 7.

7.284 Volumes of GGBS sales have fallen by over 40 per cent during the period of review, and the level of profits and associated profitability has fallen in response, particularly from 2009 onwards. This was the year in which Hanson mothballed and impaired its assets at Teesport. Profitability, however, remains well above the costs of capital with there being plenty of spare capacity to process GBS into GGBS should demand pick up in the future.

7.285 As part of our GGBS profitability analysis, we obtained a fair valuation report that was prepared for Hanson by [x], after Hanson's acquisition of Civil and Marine (Holdings) Ltd in 2006. This report placed value on the contractual arrangements between Civil and Marine and Tarmac on the basis that 'these Supply Agreements, together with the limited supply of granulated slag in the UK, lead to a situation where Civil and Marine is the predominant supplier of UK sourced GGBS', although the report noted that there was an element of subjectivity in any valuation of intangible assets.¹³⁴ The report noted that granulated slag could only be imported in small quantities and at higher cost than purchasing from Tarmac, and therefore that the GBS used at that time by Civil and Marine and supplied by Tarmac could not be easily replaced at an equivalent cost. The report stated, based on management estimates, that the Supply Agreements provided Civil and Marine 'with a significant cost advantage'.¹³⁵

7.286 Hanson told us that GGBS sales had fallen by significantly more than cement sales because there was a large surplus of cement and because GGBS had become relatively more expensive than cement, in that inflation in electricity prices had a greater impact on GGBS production costs, reducing the pricing differential between cement and GGBS. Hanson told us that it had reduced its GGBS prices to defend its business, albeit it told us that any price reduction was dictated by keeping an acceptable margin in order to maintain ROCE to a level that was satisfactory to its shareholders.

¹³⁴ Hanson told us that this report was prepared for US GAAP purposes and made no attempt to establish economic or true market values. It also told us that the report relied on information provided by the then management of Hanson, as well as publicly available information, and that the report stated that [x] did not undertake a detailed financial review of Civil and Marine for the purposes of the preparation of the report. We note that the title of the report suggests that it was undertaken both for US GAAP and for UK purposes, as it states that the valuation was done for IFRS 3 and SFAS 141. The report states that it should not be relied upon for any purpose other than for those accounting requirements. We also note that the report states, in paragraph 5.19, that [x] 'reviewed the tangible assets at the various operations of C&M and inspected a number of the major facilities'.

¹³⁵ The competitive constraint from imported GBS is analysed further in Appendix 13.5.

7.287 We examined the evolution in Hanson’s prices and accompanying changes on volume of sales and margins.

7.288 Table 7.24 shows Hanson’s average nominal and real prices of GGBS to external customers for years 2007 to 2011. We see from Table 7.24 that, despite the very large drop in demand for GGBS in 2008, 2009 and 2010, prices of GGBS (in both nominal and real terms) increased overall between 2007 and 2011. We also see that real prices of GGBS peaked in 2009, to then reduce by 6 per cent between 2009 and 2011.

TABLE 7.24 Hanson GGBS prices, 2007 to 2011

	<i>Hanson average nominal GGBS price to external customers £/tonne</i>	<i>Hanson average real GGBS price to external customers* £/tonne</i>	<i>Changes in volumes of GGBS sold by Hanson %</i>
2007	[REDACTED]	[REDACTED]	[REDACTED]
2008	[REDACTED]	[REDACTED]	[REDACTED]
2009	[REDACTED]	[REDACTED]	[REDACTED]
2010	[REDACTED]	[REDACTED]	[REDACTED]
2011	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC, based on Hanson data.

*Nominal average prices were calculated by dividing total revenues in a year by total volumes in the same year, for sales of GGBS to external customers. They were converted to real prices using the CPI index (based to 100 for 2011).

7.289 We have also conducted an analysis of variable cost margins for GGBS for financial years 2007 to 2012. This analysis is presented in Appendix 7.6. We found that, in percentage terms, Hanson’s margins over variable costs had decreased between FY07 and FY12, from [REDACTED] per cent in 2007 to [REDACTED] per cent in 2012. During the same period, volumes of GGBS sold by Hanson reduced by 45 per cent, from [REDACTED] Mt in FY07 to [REDACTED] Mt in FY12.

7.290 Hanson’s unit variable profits increased somewhat during the period in nominal terms, from £[REDACTED] per tonne in FY07 to £[REDACTED] per tonne in FY12, and they remained stable in real terms, despite the large fall in Hanson’s GGBS sales. In particular in FY09, which was the year with the sharpest decline in demand (27 per cent fall), unit variable profit increased on prior year from £[REDACTED] to £[REDACTED], whilst unit earnings before interest, tax, depreciation and amortization (EBITDA) increased slightly from £[REDACTED] to £[REDACTED].

Pricing of GGBS

7.291 We analysed prices of GGBS and how these compare with prices of CEM I and PFA as part of our assessment of the relevant market for GGBS (see paragraphs 5.61 to 5.68 and Appendix 5.3). Our conclusion was that current prices of GGBS charged by Hanson were constrained by prices of CEM I and (to a lesser extent) of PFA, but that this was only because there were no other competing producers of GGBS in GB.

7.292 As part of our analysis of GGBS prices, we obtained evidence from Hanson on the pricing tool it uses for GGBS (see paragraphs 5.63 to 5.66). We found that the examples provided by Hanson of its pricing tool suggested that the pricing of GGBS to individual customers did not appear to take into account the costs of delivering GGBS to individual customers—in other words, prices to any given customer appeared to depend mainly on prices of PFA and CEM I alternatives, rather than on the specific costs of delivering GGBS to this particular customer.

- 7.293 In addition, the prices of GGBS were set individually to customers so as to realize, for each customer, a price which is close to the maximum price that this customer will be willing to pay before switching to alternatives (reservation price). From the small sample of examples provided, it appeared that costs of switching to PFA and CEM I or to pure CEM I were a stronger constraint on Hanson's GGBS prices than prices of purchasing imported GGBS.
- 7.294 In this respect, we also received evidence from an independent RMX producer, [REDACTED], which told us about its experience of purchasing GGBS in 2012. [REDACTED] told us that Hanson had initially offered a high price, as a result of which [REDACTED] tried to purchase Spanish GGBS imports from [REDACTED] more cheaply. However, [REDACTED] could not supply to the necessary technical specification. [REDACTED] then negotiated with [REDACTED] for German GGBS at a yet cheaper price. [REDACTED] told us that Hanson then realized [REDACTED] had not been ordering any GGBS and commented to [REDACTED] that Hanson's prices 'reflected Hanson's position in the market as sole supplier', but that, as the market position had changed, Hanson would offer [REDACTED] a lower price, which matched [REDACTED] price to [REDACTED].¹³⁶ This was consistent with the previous evidence, namely that Hanson had the ability to set prices to individual customers so as to realize a price which was close to the maximum price that this customer would be willing to pay before switching to alternatives. In this particular case, this also suggested that Hanson had only been willing to lower prices once the customer had actually switched to an importer.

Contractual arrangements for the supply of GBS and GGBS

- 7.295 As set out above, in the UK, Lafarge Tarmac and the GB steel producers (Tata Steel and SSI) have entered agreements whereby Lafarge Tarmac currently has exclusive rights to produce GBS from each of the three GB steel plants: Lafarge Tarmac owns the equipment required to water-cool the slag so as to transform it into a cementitious granulate material (ie GBS). The agreements between Lafarge Tarmac and the GB steel producers were concluded for a duration of 30 years and run until 2029. Lafarge Tarmac then sells GBS to Hanson under three exclusive long-term contracts (whereby Lafarge Tarmac must sell all granulated slag destined for cementitious use in the UK to Hanson, though Hanson is not required to take any minimum volume from Lafarge Tarmac¹³⁷). Hanson undertakes the drying and grinding to transform the GBS into GGBS. The price paid by Hanson to Lafarge Tarmac for GBS is reviewed [REDACTED] and is based on a percentages of Hanson's average [REDACTED], subject to a [REDACTED]. The [REDACTED] is reviewed either annually or at the end of every [REDACTED] year with respect to the GGBS sales from Teesside and Scunthorpe.
- 7.296 Hanson and Lafarge Tarmac entered into long-term exclusive supply agreements which were all varied in 1999 and expire in 2029. The contracts have over 15 years to run. Further background information about the involvement of Tarmac and Hanson in the GGBS supply chain is in Appendix 7.6.
- 7.297 Hanson submitted that there were a number of efficiencies arising from the exclusive contracts it had entered into with Lafarge Tarmac. We consider these efficiencies in our assessment of relevant customer benefits in paragraphs 13.355 to 13.361 and Appendix 13.7.

¹³⁶ [REDACTED] [response to provisional findings](#).

¹³⁷ Lafarge Tarmac or Hanson (at Lafarge Tarmac's suggestion) may sell any surplus material, but only to an end-user identified by Lafarge Tarmac who does not intend to grind the granulate in the UK for sale in the domestic cement market.

Internal documentary evidence on GGBS

7.298 We also found Hanson and Lafarge internal documents (see Appendix 7.6) that noted:

- (a) the competitive advantages that Hanson's position in GGBS conferred on Hanson; and
- (b) the cost disadvantages faced by GGBS imports relative to domestically-produced GGBS.

Summary

7.299 In this section, we have described for the GB cements market—under the headings of market structure (paragraphs 7.5 to 7.130), outcomes (paragraphs 7.131 to 7.187) and conduct (paragraphs 7.188 to 7.238)—the evidence available to us, and the individual pieces of analysis we carried out, as inputs to our competitive assessment (see Section 8). In addition, we have set out for the GGBS supply chain (paragraphs 7.251 to 7.298) the evidence and analysis we used in our competitive assessment. We also examined the impact of recent developments on the structure of the GB cement markets, namely the formation of Lafarge Tarmac and HCM and the acquisition by CRH of additional GB cement import terminals (paragraphs 7.239 to 7.250). As well as evidence on market outcomes that was of concern (and that we explore more fully in Section 8), there were individual pieces of evidence and analysis which, when taken in isolation, could be consistent with unilateral market power, coordination and/or competition. In Section 8 we bring together all the evidence and analysis to assess it in the round in order to determine whether there are features of the GB cement markets that give rise to one or more AECs through unilateral market power or coordination.

8. Cement: competitive assessment

8.1 In this section, we use the evidence and analysis set out in Section 7 to assess whether there are any features of the GB cement markets giving rise to one or more AECs through unilateral market power or coordination. We first look at evidence and analysis relating directly to the GB cement markets, and then look at the evidence and analysis relating to the GGBS supply chain and its interaction with the GB cement markets.

The GB cement markets

8.2 We reviewed the evidence in Section 7 on the structure of the cement market, the outcomes of competition in the cement market and the behaviours observed. In this section, we bring together all the evidence and analysis to assess it in the round in order to determine whether there are features consisting in the structure of, or conduct in, the GB cement markets giving rise to one or more AECs through unilateral market power or coordination.

Market outcomes

Overall picture

8.3 We considered the evidence on market outcomes, as updated following the publication of our provisional findings where additional data had become available. We found evidence that competition in the GB cement markets was not working effectively, including in relation to profitability, margins, prices and market shares.

8.4 Profitability assessed on a comprehensive basis after impairment losses (the measure which we consider to most closely reflect the firms' economic profitability) exceeded the cost of capital¹ averaged over the six-year period of review despite (a) the 36 per cent decline in demand from 2007 to 2009 and (b) the fact that that this period did not cover at least the whole of a business cycle. In a well-functioning market, we would expect, as set out in paragraph 116 of the Guidelines, that: 'Firms ... would generally earn no more than a "normal" rate of profit ... ie the rate of return on capital employed for a particular business activity would be equal to the opportunity cost of capital for that activity'. In addition, we note that profitability on all the bases we analysed (ie HCA based on all costs incurred² and CCA profitability assessed on a comprehensive basis both before and after impairment) exhibited a recovery after the slump in demand up to 2011. While we noted that cash flows generated from operations were not a measure of economic profitability, we found that trends in these cash flows were consistent with the trends in profitability that we observed, and indicated the resilience of the GB cement producers over this period. We note that, following the demand slump from 2007 to 2009, demand has yet to recover significantly, and overall demand (in terms of GB sales volumes) fell back 7 per cent from 2011 to 2012 (see paragraph 2.53). In a well-functioning market, we would have expected these ongoing adverse trading conditions to have a continued adverse effect on profitability (even if not necessarily as severe as the initial impact).

8.5 For the GB cement producers, variable profit margins (and, for three out of four producers, EBITDA margins) remained stable, or even in some cases increased, between 2007 and 2011, despite the 36 per cent drop in demand for cement between

¹ As set out in Appendix 4.2, we used a figure of 10 per cent as our midpoint estimate of the Majors' weighted average cost of capital (WACC).

² HCA profitability is set out in Appendix 7.7.

2007 and 2009 (and little recovery in demand since 2009) and increasing costs (particularly in 2009; see paragraph 7.168). As set out in Table 7.14, FY12 variable profit and EBITDA margins fell on FY11 levels. However, they had returned to, or were higher than, their respective levels in 2008, before the 12 months' impact of the market downturn seen in 2009. In nominal terms, average cement prices generally increased at a faster pace than costs, or, in periods where costs reduced (after they reached their peak in 2009), reduced less than costs. In real terms, cement prices peaked in 2009, to then reduce between 2009 and 2012. Overall, average cement prices had increased in real terms over the period 2007 to 2012 (+1 per cent for bulk; +8 per cent for bagged). In a well-functioning market, faced with a demand slump, significant excess capacity and high fixed costs, we would expect market participants to experience significant erosion of margins as they competed with each other on price to maintain volumes.^{3,4}

8.6 There had only been small changes in market shares (the most for any Major was four percentage points) over the period 2007 to 2012, despite the 36 per cent decline in demand from 2007 to 2009 (see paragraphs 7.6 to 7.16). In a well-functioning market (see paragraph 4.7) we would expect that, faced with a demand slump, significant excess capacity and high fixed costs, market participants would compete vigorously to maintain volumes which would result in greater volatility in market shares during such a period.⁵

8.7 In addition to the evidence on profitability, margins, prices and market shares, we found that customers who did not switch between cement suppliers did not benefit from the relatively lower prices of those customers that did switch—in other words, there was price discrimination (see paragraph 7.181).⁶ Lafarge Tarmac told us in

³ Hanson argued that under perfect competition, a downturn in demand would not erode margins because prices would already be set at variable cost. However, we do not think perfect competition is the appropriate benchmark against which to assess the effectiveness of competition in the GB cement markets. Our approach is consistent with paragraph 30 of the Guidelines which states that 'the CC uses the term "a well-functioning market" in the sense, generally, of a market without the features causing the AEC, rather than to denote an idealized, perfectly competitive market'. Hanson also argued that standard static models of competition such as Bertrand or Cournot competition predicted that margins would fall more under collusion than under competition and that we had not taken these models into account. We noted first that most models of competition would predict a fall in margins following a demand slump, which we did not observe here. Second, as set out in paragraph 8.5, given the degree of excess capacity created by the demand slump, we would expect that, in a competitive market, this would have resulted in significant erosion of margins.

⁴ In its [response to provisional findings](#) (paragraphs 5.1–5.6), Cemex submitted that economics literature said that, in times of financial distress, more highly leveraged firms tended to compete less aggressively (ie set higher prices or margins, choose lower output, invest less in capacity expansion), because higher leverage required larger debt service payments to prevent the company becoming insolvent. Cemex argued that financial distress raised the importance of current revenues, and might induce firms to raise prices or variable margins following a demand slump. However, we considered that, even if a firm wanted to service its debt by increasing its prices and/or margins because it was suffering financial distress, in a competitive market it would have to set prices (and accept margins) based on the prevailing competitive prices. Only similar changes in the level of indebtedness for all producers (which did not appear to be the case in the GB cement markets) could explain whether UK cement producers might have competed substantially less aggressively on prices and therefore explain the stability of variable profit margins.

⁵ Hanson argued that instability in market shares in these circumstances was not a prediction of many economic models, though there were some models where this might be the case (such as the supply function model with asymmetric costs). However, the period of our assessment was a period with very large changes in demand as well as changes in relative efficiencies of the GB cement producers because of various plant closures. We would therefore expect that this would result in large changes in market shares during this period.

⁶ Hanson argued that price dispersion was a powerful indicator of whether a market was characterized by competition or coordination, that price dispersion typically increased when there was greater competition in a market and that we should recognize this in the context of the GB cement market. In support, Hanson referred to the following economic articles: Blanckenburg, Kv, Geist, A and Kholodilin, KA (2012), 'The Influence of Collusion on Price Changes: New Evidence from Major Cartel Cases', *German Economic Review*, 13(3), 245–256. Bolotova, Y, Connor, JM and Miller DJ (2008), 'The Impact of Collusion on Price Behavior: Empirical Results from Two Recent Cases', *International Journal of Industrial Organization*, 26, 1290–1307. Carlson, J and McAfee, R (1983), 'Discrete Equilibrium Price Dispersion', *Journal of Political Economy*, 91 (3), 480–493. Carlton, DW (1986), 'The rigidity of prices', *American Economic Review*, 76, 637–658. We noted that the articles Hanson referred to were concerned with price dispersion over time—ie the fact that prices tended to react more to shocks, over time, when there was greater competition in the market. This is very different to the price dispersion to which we refer in this paragraph, which relates to the extent of dispersion in prices, at one point in time, between different customers. Price dispersion across customers is not incompatible with coordination, particularly coordination on market shares. We have taken into account changes in the level of price dispersion over time in our assessment of the GB cement markets (see paragraphs

response to our provisional findings that the fact that customers who did not switch suffered higher prices might be because some customers were not concerned about prices, and/or were unwilling to shop around, and/or preferred superior quality of service. We agreed that price discrimination might be due to different customers having different behaviour. However, regardless of the source of price discrimination, we found that it meant that the behaviour of the customers who were more able to switch or to negotiate was not necessarily resulting in lower prices for all customers across the board.

Margins and capacity

- 8.8 In interpreting the evidence on margins, we noted that there were large changes in both supply of and demand for cement in the years following the demand slump that commenced in 2007:
- (a) as noted above, demand reduced by 36 per cent between 2007 and 2009; it then increased again in 2010 and 2011, before decreasing by 7 per cent in 2012 on prior year levels; and
 - (b) GB cement production capacity reduced by about 27 per cent between 2007 and 2011. There were only small changes in GB cement production capacity between 2011 and 2012.
- 8.9 The reduction in cement capacity could have protected margins despite the reduction in cement demand if the industry were using the remaining capacity in full following the reduction in capacity (ie if it were capacity constrained). However, this was not the case: there has been sizeable excess production capacity since 2008, particularly in 2008 and 2009 (see Appendix 7.2). Therefore the observed stability in margins cannot be explained only by the fact that supply contracted when demand dropped.
- 8.10 Lafarge Tarmac, in its response to our provisional findings, told us that, while it retained excess cement capacity in 2009 to 2011, this was primarily held at Dunbar, its least efficient plant, and that Lafarge's three other cement plants at Aberthaw, Cauldon and Hope in 2011 each operated with a cement utilization rate of [redacted] per cent or greater.⁷ While we agree that, in 2011, overall spare capacity was lower than in previous years due to rationalization of capacity in the industry, there would still have been considerable excess capacity in the GB cement industry until the middle of June 2010 when Lafarge closed its Westbury plant. Therefore, the relatively low levels of excess capacity in 2011 (and in 2012) do not explain the stability in margins observed in 2009 and 2010, when there were still high levels of excess cement capacity in GB.⁸
- 8.11 We were told that the main reason for the stability or even increase in variable profit margins in 2009 was that GB cement producers had cut costs in response to the economic downturn. However, we did not see strong evidence that these efficiencies had been competed away and passed on (through lower prices) to cement buyers. In real terms, whilst cement prices peaked in 2009, to then reduce between 2009 and 2012, overall average cement prices increased in real terms over the period 2007 to 2012 (+1 per cent for bulk; +8 per cent for bagged).

8.294–8.303). We consider that changes in the relative amount of price dispersion over time can be used to indicate more or less competition in a market over the period considered.

⁷ Lafarge Tarmac response to provisional findings, paragraph 29.

⁸ Further analysis of cement capacity is presented in Appendix 7.2.

- 8.12 Taken together, the evidence on margins and capacity suggested to us that cement producers did not compete as vigorously as might have been expected when they faced such a significant reduction in demand.

Possible explanations for market outcomes

- 8.13 In Section 7, we found that there were individual pieces of evidence and analysis which, when taken in isolation, could be consistent with unilateral market power, co-ordination and/or competition. However, we found evidence from market outcomes (as set out in paragraphs 8.3 and 8.7) that competition in the GB cement markets was not working effectively. We address parties' comments on the market outcome evidence in their responses to our provisional findings in paragraphs 8.19 to 8.41. We considered unilateral market power or coordination as explanations for the market outcomes we observed.
- 8.14 We note that the distinction between unilateral market power and coordination is not necessarily clear-cut. As set out in paragraph 4.25, the Guidelines explain⁹ that the exercise of unilateral market power is not necessarily linked to the position of a single firm. A market with a small number of suppliers protected by barriers to entry (an oligopoly) may be characterized by significant market power.
- 8.15 To assist us in assessing and interpreting the evidence and the results of our analysis, we used a large body of internal documentary evidence which we obtained from the Majors during our investigation. While we treated the documents that we saw as only one element of the overall evidence base, the documents have an important place in our findings in providing direct and contemporaneous evidence of how the Majors have been behaving in the GB cement markets, their strategies and their relationships with each other. Although the scope and nature of the documents differed throughout the period, we had internal documents that spanned a number of years (up to and including 2012) so it was possible to observe behaviour over time. Also the evidence consisted of documents that had not been prepared specifically in contemplation of our investigation, although we were mindful that the later documents were prepared at a time where the market was subject to our review and the DG COMP investigation into the cement sector (see paragraph 1.10).
- 8.16 We found that there were examples of documents containing direct evidence of co-ordination and/or a strategic approach to activity in the market by certain Majors that was aimed at coordinating to achieve market stability.
- 8.17 While the documentary evidence includes documents providing evidence of coordination, it also contains documents providing evidence of some competition taking place, as discussed in our assessment below. The documents providing evidence of coordination are more prevalent in the early period of our review prior to DG COMP's investigation. The evidence also suggests that the balance between competition and coordination does not appear to be a constant one throughout the period covered. We considered that the changing balance reflects in part changing external conditions, and we discuss each set of documents in more detail in their relevant context below. However, we considered that the existence of a volume of documents which contained evidence of coordinated behaviour in the GB cement markets was significant and was evidence of fundamental shortcomings in the process of rivalry in those markets.

⁹ The Guidelines, [paragraph 189](#).

8.18 The remainder of our competitive assessment of the GB cement markets is therefore structured as follows:

- (a) We consider parties' comments on our market outcome evidence as presented in our provisional findings, and the extent to which this evidence is consistent with coordination.
- (b) We review the internal documentary evidence, and describe the key observations emerging from that review.¹⁰ As noted in paragraph 8.16 above, we consider that these documents contain direct evidence of coordination and/or conduct aimed at achieving coordinated outcomes.
- (c) We consider in more detail how coordination is taking place in the GB cement markets (ie the 'mechanism for coordination'). In doing so, we examine the susceptibility of these markets to coordination and how the three conditions necessary for coordination to be sustainable in a market¹¹ are met.
- (d) We assess the variation over time in the evidence and the results of our analysis.
- (e) We analyse the incentives of market participants to coordinate.
- (f) We set out the role that each of the Majors plays in these markets, and we explore the effects of recent developments, including the formation of Lafarge Tarmac and HCM, on the markets.
- (g) We assess the effect of coordination on competition in the GB cement markets.
- (h) We conclude on whether there are features consisting in the structure of, or conduct in, the GB cement markets giving rise to one or more AECs.¹²

Parties' comments on market outcomes and possible explanations for market outcomes in response to our provisional findings

- *Profitability*

8.19 We received comments from the GB cement producers specifically on the interpretation of our profitability analysis in the light of possible coordination in the market.

8.20 Lafarge Tarmac stated that we should consider ignoring carbon credits income (ie income deriving from surplus carbon allowances) because its extent was not a function of coordination and because Lafarge Tarmac's production decisions over 2007 to 2012 were unaffected by the price of CO₂ (and hence, Lafarge Tarmac

¹⁰ This review is a synthesis of the evidence in the internal documents—we also draw on this evidence in detail in subsequent parts of our competitive assessment.

¹¹ The Guidelines, [paragraph 250](#).

¹² In paragraph 6.5.1 of its [response to provisional findings](#), Hanson objected that our definition of coordination was too broad, in that it included the 'normal commercial practice' of being aware of, and taking into account, the likely reaction of competitors, citing in this regard cases of the EU Court of Justice (CJEU) concerning Article 101 TFEU. However, as the Guidelines explain in [paragraph 240](#), the CC may investigate all forms of coordination that have an effect on competition, whether or not these consist of unlawful behaviour falling within Article 101. Indeed, as the CJEU itself explained in the judgment of the Court of First Instance in Case T-342/99 *Airtours v European Commission*, effective competition may be significantly impeded (for the purposes, in that case, of the EU Merger Regulation) in a position of 'collective dominance' where each member of the dominant oligopoly adopts 'on a lasting basis a common policy on the market [...] without having to enter into an agreement or resort to a concerted practice within the meaning of [Article 101 TFEU]' (judgment of 6 June 2002, paragraph 61). That judgment is also cited by Cemex, in paragraph 7.55 of its [response to provisional findings](#), to remind us that where coordinated behaviour of this kind is alleged to exist, the CC must provide 'convincing evidence' (paragraph 63), although we note that the judgment also points to the 'discretionary margin' implicit in any such 'assessments of an economic nature' (paragraph 64).

argued, revenues from the sales of carbon allowances could not indicate a return from coordination). We disagree in that there are many factors which influence firms' profitability which would be independent of coordination (eg fuel input prices) but that does not preclude these elements being included in the assessment of profitability.

- 8.21 Hanson argued that, even taking our analysis at face value, we had (according to Hanson) also stated that it would be normal healthy competition for the cement market to be allowed to achieve financial capital maintenance by earning a full return on its capital employed, and that some degree of excess profitability was not inconsistent with competition. Hanson stated that we had, however, incorrectly treated every £1 of ROCE over WACC as being financial detriment (therefore overstating any alleged detriment).¹³
- 8.22 Both [redacted] and [redacted] commented on the relative profitability of the firms, noting their own less profitable respective financial positions. Hanson highlighted that Tarmac's profitability was now assessed to be the highest of all and yet Tarmac was the only Major not alleged to be coordinating.
- 8.23 We do not consider the fact that Tarmac's profitability was assessed to be the highest among the four GB cement producers was a bar to there being coordination in the market.
- 8.24 Based on our analysis of profitability over the period of review (2007 to 2012) in the round as set out in Table 7.10, noting in particular the levels of profitability being achieved post 2009, we conclude on the balance of probabilities that the levels of profitability being achieved are consistent with there being coordination in the cement market. While there has been a downturn in profitability in 2012 compared with 2011 (for the reasons set out in 7.158), this is too short a period on which to place great weight when drawing a conclusion about overall levels of industry profitability.

- *Prices and margins*

- 8.25 Lafarge Tarmac¹⁴ told us that we had looked at the wrong period when analysing trends in prices, because 2007 was a boom year, and because it had faced difficulties in supplying the market in 2007 due to the combination of unprecedented levels of high market demand and a fatality and explosion at two of its largest plants, Northfleet and Hope.¹⁵ Lafarge Tarmac told us that prices fell substantially: from their peak in Q1 2009, which was caused by a peak in underlying variable costs, Lafarge Tarmac told us that its prices had fallen in 2009, continuing to fall in real terms over the 2010 to 2013 period. Lafarge Tarmac told us that this reduction in prices was consistent with a non-coordinated market.¹⁶
- 8.26 Cemex agreed with Lafarge Tarmac's argument that we were basing our conclusions on the wrong period. Cemex said that 2007 was a period of high demand as it was prior to the recession. Cemex submitted that since the downturn at the end of 2008, and barring a rise in prices in Q1 2009 due to an extraordinary increase in costs, industry prices had shown a marked downward trend. Cemex said that intense competition and buyer power had forced the GB cement producers to drastically reduce their cement prices from their 2009 peak.

¹³ However, in a well-functioning market, returns no higher than WACC do not preclude financial capital maintenance (a concept explained in Appendix 4.1) for all market participants (see Appendix 7.7, paragraph 45).

¹⁴ [Lafarge Tarmac response to provisional findings](#), paragraph 27.

¹⁵ *ibid*, paragraph 28.

¹⁶ *ibid*, paragraph 21.

- 8.27 It was not clear to us why 2009 should be used as a benchmark for assessing price trends rather than 2007, as 2009 was marked by a peak in variable costs. If we use 2008 as the benchmark instead of 2007, we find that average bulk cement prices have reduced by 5 per cent in real terms between 2008 and 2012, and bagged cement prices have increased by 3 per cent in real terms between 2008 and 2012 (see Appendix 7.8). However, this reduction in the real prices of bulk cement is small in magnitude compared with the extent of the fall in the demand for cement over the period (a drop of over 30 per cent), and, as our analysis of margins shows, this reduction in real prices did not translate into a corresponding reduction in margins suggesting that, if prices reduced, they did not reduce as much as average variable costs during the period (see paragraph 8.5). As we set out above, in a well-functioning market, faced with a demand slump, significant excess capacity and high fixed costs, we would expect significant erosion of margins as market participants compete with each other on price to maintain volumes. Although there was some reduction in real prices after 2009, these reductions did not appear to erode margins and therefore this suggested to us that competition was not as intense as we would expect it to be in a market with falling volumes and significant excess capacity.
- 8.28 Lafarge Tarmac told us that stability of margins was not probative of coordination, and that stable margins might be observed in a non-coordinated market when demand decreased substantially, if costs fell sufficiently as demand fell. It further submitted that stable margins might be observed in non-coordinated markets where capacity was reduced sufficiently to redress the supply-demand balance, and that even a monopolist would reduce prices during a slump.¹⁷
- 8.29 Hanson made a similar comment. It told us that there was no basis for concluding that constant variable profit margins were consistent with coordination, and that, in the event of a significant negative demand shock, standard economic models predicted that coordination would result in variable profit margins falling when demand fell.¹⁸ Hanson told us that stable variable margins could be consistent with effective competition where capacity had adjusted rapidly to lower levels of demand.¹⁹
- 8.30 We discuss capacity reductions and cost reductions and how these compare with the reduction in demand in paragraphs 8.8 to 8.12 above. We note that, in 2009, when costs increased substantially, prices of cement peaked and the demand reduction was greatest, the GB cement producers' margins either remained stable or increased compared with their levels in 2008 (see Appendix 6.5). This does not appear consistent with stability of margins being explained by costs reducing sufficiently when demand fell. We also note that it is not necessarily true, as Lafarge Tarmac and Hanson state, that a monopolist or a coordinating group of firms would reduce margins during a downturn. It requires a particular specification of the demand function to arrive at this conclusion, and there is no evidence that such a demand function applies in this situation.²⁰ We also note that we do not necessarily expect a group of coordinating firms to behave as a monopolist, and in particular we may expect prices and margins with tacit coordination to be less responsive to demand shocks than if there were a monopolist (or competing firms) in the market, because (if there were coordination) GB cement producers would be likely to be more cautious about reducing prices as this could be interpreted as a deviation from the coordinated outcome (whether coordination were on prices or volumes).

¹⁷ [Lafarge Tarmac response to provisional findings](#), paragraph 33.

¹⁸ [Hanson response to provisional findings](#), paragraph 6.5.3.

¹⁹ *ibid*, paragraph 6.5.3.

²⁰ If demand pivoted inward (rather than shifted down), ie if the reduction in demand affected the slope of the demand curve, we would expect a monopolist or a coordinating group of firms to maintain constant margins with a demand slump.

- 8.31 Hanson told us that we had placed undue and disproportionate reliance on variable margin analysis, in light of:
- (a) the relative lack of significance of the assessment of variable margins compared with profitability assessment based on ROCE;
 - (b) the uncertainties over what should be considered as variable as opposed to fixed costs (and Hanson argued that we had assume many semi-variable costs, for example labour, to be fixed);
 - (c) the fact that EBIT margins had not been stable, and
 - (d) the fact that cement prices had reduced in real terms between 2009 and 2011.²¹
- 8.32 We considered that variable margin analysis was an important analysis in order to understand the competitive reactions of the GB cement producers between 2007 and 2012, and in particular in the context of the large fall in demand experienced in 2008 and 2009. Though prices are also informative, because of the large changes in variable costs of the GB cement producers during the period we analysed, we thought it was important to analyse both changes in prices and changes in prices controlling for changes in costs (ie, variable profit margins). In addition, we note that we also conducted a full analysis of profitability of GB cement producers, taking into account fixed and sunk costs, as well as an analysis of other market outcomes (such as market shares, for instance) and therefore our provisional conclusions were based on an assessment of the evidence on outcomes in the round.
- *Stability of market shares*
- 8.33 Cemex submitted that we had overstated the stability in market shares between 2007 and 2011.²² It submitted that there was high volatility in monthly market shares, with monthly market shares of the GB producers varying by as much as four percentage points—or [X] percentage points if Hanson’s internalization of cement purchases from Lafarge was taken into consideration.²³ Cemex also submitted that the variation in annual average shares did not show the full extent of variation across the period and submitted that, looking at monthly market shares, there had been significant changes when comparing the maximum monthly share of any GB producer with the lowest monthly share it had achieved.²⁴
- 8.34 Hanson told us that we had understated and omitted key changes in market shares, such as [X].²⁵
- 8.35 We agreed that monthly shares show higher variation than annual market shares (see paragraph 8.222). We noted that, despite these variations in monthly market shares, annual market shares remained broadly stable over the time period we analysed. This suggested that wins and losses tended to even out over annual time scales and, as we set out in paragraph 8.222, this was consistent with the existence of a mechanism by which short-term perturbations in shares were rebalanced. We had particular concerns about, and carried out analysis of, market share stability in part because of the internal documentary evidence regarding the Majors’ market share strategies (see paragraphs 8.78 to 8.85 and 8.120 to 8.151).

²¹ [Hanson response to provisional findings](#), paragraph 8.16.

²² [Cemex response to provisional findings](#), paragraphs 4.1–4.15.

²³ *ibid*, paragraph 4.4.

²⁴ *ibid*, paragraph 4.2.

²⁵ [Hanson response to provisional findings](#), paragraphs 6.5.25 & 8.22.

- 8.36 Cemex submitted that the market shares for all grey cement (bulk and bagged) were more stable than those for individual subcategories of cement, and that, given the differences in profitability across segments, the variations in shares in these segments would undermine any tacit agreement by resulting in diverging incentives.²⁶ It also submitted that external market shares were more variable than overall market shares including internal sales.²⁷ Lafarge Tarmac told us that Lafarge, Cemex and Hanson's relative shares of sales of bulk CEM I to independents and of bagged cement had shown significant variation between 2007 and 2011 and could not be described as stable. It also told us that regional market shares had shown more volatility than national market shares, and that the demand slump was not spread evenly across GB.²⁸ Hanson told us that there was greater volatility in regional market shares than in GB shares, that its share in [X] had declined dramatically (and was now lower than that of importers), and there had been significant changes in shares in the [X].²⁹
- 8.37 We agree that relative shares within segments of the GB cement markets, as identified by Cemex and Lafarge Tarmac, have shown greater variation than overall shares of sales of grey cement. However, as we set out in paragraph 8.208, the evidence was consistent with coordination taking place on sales of all grey cement in GB, whether bulk or bagged, and whether sold to independent customers or sold internally. We also found evidence that market share rebalancing took place over the wider cement market: so when a GB producer lost share in the bulk cement market, we found evidence of rebalancing of market shares through increased sales in bagged cement (see, for example, paragraph 7.235(b) and (c)). We also found evidence that, when a GB producer had lost sales to other Majors, rebalancing of market shares occurred both through increases in own internal sales and also through increasing sales to independent customers (see, for example, paragraphs 7.230 to 7.238). Therefore, we think that the greater variation in relative shares within segments of the GB cement markets is consistent with an aim of market share stability over the wider GB cement sales.
- 8.38 Lafarge Tarmac told us that the CC had not identified the degree of volatility in market shares that it would expect in a competitive market, and that economic theory did not predict that a decline in demand would necessarily give rise to large variations in market shares. It submitted that, for firms with similar variable costs, standard economic models predicted that a decline in demand would not have a material impact on market share.³⁰
- 8.39 Hanson made a similar comment. It told us that there was no basis in economic theory for the view that a decline in demand should lead to market share volatility. It also submitted that the provisional findings did not provide any indication as to how much volatility it would expect in a competitive market. In support of its argument, Hanson submitted results from a Monte Carlo modelling exercise, which it said showed that the level of volatility observed was what Hanson would expect in a competitive and well-functioning market.³¹
- 8.40 We agree that, if costs are constant and similar across firms, most models of competition or oligopoly would not necessarily predict market share changes when demand falls. However, these assumptions were not satisfied for the GB cement markets during the period we analysed. First of all, we note that, even though at an

²⁶ Cemex response to provisional findings, paragraph 4.5.

²⁷ *ibid*, paragraph 4.6.

²⁸ Lafarge Tarmac response to provisional findings, paragraph 24.

²⁹ Hanson response to provisional findings, paragraphs 8.41 & 8.42.

³⁰ Lafarge Tarmac response to provisional findings, paragraphs 20 & 23.

³¹ Hanson response to provisional findings, paragraphs 6.5.5 and 8.18–8.43.

average level GB producers have similar variable costs (ie across their plant portfolio), there are differences in variable costs across individual plants (see Appendix 6.5). In addition, there were changes in relative efficiencies during the period we analysed as a result of Lafarge and Cemex having closed down cement plants between 2008 and 2010 (see Appendix 7.2). In a well-functioning market, faced with a large decline in demand and changes in relative efficiencies of the different producers as a result of plant closures, we would therefore have expected significant changes in market shares, with the more efficient cement plants gaining share at the expense of the less efficient plants.

- 8.41 With regard to the Monte Carlo simulation submitted by Hanson, the model that was built by Hanson was a mechanistic simulation model, which assumed mechanical losses and gains of sales over time, so that volatility of market shares was built by construction in the model. The model submitted by Hanson was not an equilibrium model and it did not take into account the fact that firms would compete (on price, for example) to gain customers over time. Instead, the model assumed that customers would indifferently switch between cement providers over time in a mechanistic manner, rather than switch to cement suppliers that offered a more competitive price. Moreover, the model built by Hanson did not take into account any demand reduction and computed market share volatility in a steady state. For all of these reasons, the Hanson model did not provide an appropriate indication of the extent of market share volatility that would be expected in a well-functioning market with a demand shock.

The internal documentary evidence

- 8.42 In this subsection, we describe our review of the internal documents we gathered from the Majors during our investigation and what we observed in these documents regarding the behaviour of the Majors in the GB cement markets.
- 8.43 In the following subsections, we first describe the various categories of document we received and our process for reviewing and evaluating them. Second, we provide some commentary on our general approach to interpreting this evidence. Third, we identify our key observations from each body of documents. In the final subsection, we consider the documentary evidence as a whole.

Methodology

- 8.44 The internal documents covered in this subsection fall into three categories: first, documents provided by Lafarge, Hanson, Cemex and Aggregate Industries relating to the period up to and including 2008 ('the 2008 documents'); second, strategy and other business planning documentation from the period 2008 to 2011 ('the strategy documents'); and third, certain email communications provided by the Majors relating to the period August 2010 to September 2012 ('the 2012 documents'). We also include some relevant observations from the documents we reviewed in relation to the 2009 internalization by Hanson. Those documents are discussed more fully in Appendix 7.14.
- 8.45 A fuller explanation of the nature of the 2008 documents is in Appendix 8.1. The documents in this category include emails, strategy documents and other business documents. They relate in the main to the period 2002³² to 2008. The documents do not exclusively cover cement, though our focus has been on those documents relating to cement.

³² There are a small number of documents that pre-date 2002 or are undated. There are only a limited number of documents that pre-date 2005.

- 8.46 We identified a number of themes from our initial review of the documents and identified particular documents of interest. The originators of the documents had an opportunity to comment on those themes and on their own documents identified in that original review. Further details of our methodology in respect of the 2008 documents are set out in Appendix 8.1.
- 8.47 In order to make best use of the 2008 documents to capture the dynamics in the market over time we also prepared a chronology of events, drawing on key documents, grouping together documents from different sources covering the same event or theme and setting out those documents in broad time order. This is in Appendix 8.2.
- 8.48 We have taken into account in our observations the comments described in paragraph 8.46 and have referred to such comments where material to our observations (although we have not exhaustively set out those comments).
- 8.49 In paragraphs 8.61 to 8.101 below we describe what we observed from the 2008 documents, taking into account the material outlined in Appendix 8.2.
- 8.50 The strategy documents comprised a range of documentation from the Majors in response to our standard initial document request at the outset of our investigation. These documents related to the Majors' business strategies and business planning. The documents were mainly created during the period 2009³³ to 2011 but some are forward looking.
- 8.51 A fuller explanation of the nature of the 2012 documents is in Appendix 8.1. The documents comprise emails and their attachments relating to the period from August 2010 to September 2012.
- 8.52 As with the 2008 documents, we identified a number of themes from our initial review of the documents and identified particular documents of interest. The originators of the documents had an opportunity to comment on those themes and on their own documents identified in that original review. Further details of our methodology in respect of the 2012 documents are set out in Appendix 8.1.
- 8.53 As with the 2008 documents, we prepared a chronology of events based on the 2012 documents, drawing on key documents, grouping together documents from different sources covering the same event or theme and setting out those documents in broad time order. The chronology, which covers in this case documents from Hanson, Cemex and Lafarge, is in Appendix 8.3. In Appendix 8.4 we include extracts from certain documents of interest from each of Tarmac and Aggregate Industries.
- 8.54 We have taken into account in our observations the comments described in paragraph 8.52 and have referred to such comments where material to our observations.
- 8.55 In paragraphs 8.107 to 8.199 we describe what we observed from the 2012 documents (taking into account the material outlined in Appendices 8.3 and 8.4) and the strategy documents. We deal with these two sets of documents together as the periods covered by each set overlap to a great extent.
- 8.56 In its response to the provisional findings, Hanson argued that our approach to the selection of the 2012 documents was circular because it was outcome-dependent. Hanson submitted that the pre-selection of data led to a distortion in the CC's analy-

³³ Some of the Lafarge documents are from 2008.

sis. We do not consider that this is a fair or correct criticism of the methodology we adopted. To obtain the 2012 documents, we made a targeted document request to each of the Majors, based on a list of key terms informed by our analysis of the 2008 documents and the developing issues in our investigation. We reviewed all the documents we received and we then made a further selection of documents under key themes, in order to identify the documents that were of most interest to our inquiry whilst reducing the results of the document request to manageable proportions. Such an approach in no way pre-supposed the ongoing existence of the problematic behaviour we had identified in the 2008 documents. The aim was not to choose a representative cross-section of the total corpus of documents, but rather to present a body of documentation, if it existed, that appeared to disclose competition issues. In a well-functioning market we would not have expected to find any evidence of behaviour aimed at achieving coordination between firms, nor of such coordination occurring in practice. In any event, it remained open to all parties to our investigation to make submissions to us, including submissions based on their own internal documents that were not responsive to our 2012 document request or which were not included in our final selection of documents.

Interpretation of internal documentary evidence

- 8.57 The nature of documentary evidence of this kind is that it cannot give a complete view of particular events as it will be supplemented by other forms of communication. We are also aware that the documents we reviewed do not represent a complete set of all documents relevant to activity in the GB cement markets during the relevant periods—there will inevitably be some gaps in the picture emerging from the documents. The evidence is by its nature anecdotal. Therefore, it was important to apply an element of judgement in evaluating what the body of documents as a whole demonstrated about the extent and nature of rivalry within the GB cement market. While in the following discussion we identify particular emails by way of example to illustrate the observations we make from the documents, our assessment of what the documents tell us about rivalry in the GB cement markets does not turn on individual emails; rather it is based on all the documents in the round. We considered that the documents must be interpreted in light of the evidence on market outcomes set out in paragraphs 8.3 to 8.7 that competition in the GB cement markets was not working effectively.
- 8.58 It was also relevant to consider the specific profiles of companies in the market at the different points in time covered by the documents. In Section 3 we set out information on particular companies active in the GB cement markets, and Appendix 3.2 contains a timeline of the key mergers and acquisitions affecting the Majors from 1990 to the present day. It was particularly relevant to developing our understanding of the internal documents that during 2000 to 2009 there were a series of acquisitions involving the Majors. Notably, Hanson did not have any GB cement production capability until its acquisition by Heidelberg in 2007.
- 8.59 Taking into account the qualitative nature of this evidence and the different profiles of GB cement producers over time, we did not anticipate seeing evidence of all GB cement producers engaging in all behaviours of concern continuously throughout the period. We expected that specific events such as the slump in demand from cement from 2007 to 2009 would have an effect on the use and/or frequency of certain behaviours. In particular, we set out in paragraph 8.296 the very significant events in the market immediately preceding and during the period when the strategy documents and the 2012 documents were created.
- 8.60 The internal documents were only one of several sources of evidence available to us, and, in formulating our views on competition in the GB cement markets, we took into

account all the evidence in the round, including the other qualitative and quantitative evidence set out in Section 7.

The 2008 documents

- 8.61 The 2008 documents do not represent all documentation relevant to activity in the cement market during the relevant period. Rather, they are a selection of documents that appeared on their face to raise concerns about competition problems in the GB cement markets [redacted].³⁴ This does not diminish the value of the documents as a direct record of certain behaviour and interactions between the players in the market. However, we took that important context into account in applying our judgement as to what insights the documents gave us into the extent and nature of rivalry in the market. We also considered carefully any context or explanation provided by the parties in relation to their own documents.
- 8.62 The point was put to us that the documents were ‘old’ now and therefore, given the significant changes in the market since then, of limited value in the present context. In particular, in its response to our provisional findings, Cemex argued that the changes in the market from 2008 and 2009 onwards meant that the 2008 documents were not relevant to our assessment of the market.³⁵ However, in conducting our investigation into the way in which the market operates, it was important that we did not only focus on a short or brief snapshot in time, but instead assess the operation of the market over time. The risks of focusing only on how a market has operated in a short period of time included that:
- (a) the impact of specific market conditions, prevailing in or around the time of our assessment, on market behaviour could mean that the evidence available does not provide an accurate picture of how the market operates generally; and
 - (b) we would have been prevented from identifying any trends or patterns in behaviour across different time periods and different market conditions, which could provide important evidence as to how the market operates.
- 8.63 However, we also recognized the importance of assessing the documents in their proper context. Accordingly, in evaluating the various categories of documents, including the 2008 documents, we took account of the market conditions prevailing at the time in which they were generated.
- 8.64 Overall, we concluded that it was appropriate for us to take account of the evidence provided by the 2008 documents. Considered in their context, the 2008 documents remain a valuable source of evidence to be taken into account alongside the other documentary evidence available to us, and the other forms of evidence considered in this section and which form part of our overall assessment of how the market has been operating over time.
- 8.65 We note that the documents we reviewed relating to the period covered by the 2008 documents (2002 to 2008) did not include any documents provided by Tarmac. The documents provided by the other Majors do make some reference to Tarmac and its activities on the market, though the number of documents that do so are relatively

³⁴ See Appendix 8.1.

³⁵ [Cemex response to provisional findings](#), paragraph 7.20.

limited. On a number of occasions, other Majors make reference to what they perceive to be 'aggressive' competition or strategies from Tarmac in the market.³⁶

- 8.66 As noted above, during the period covered by the 2008 documents there were a number of acquisitions and consolidations in relation to the UK cement Majors. In Appendix 8.2, we have used the name of the relevant entity and in brackets the name of the Major of which it now forms a part. In the summary below, we have generally considered activity by a Major to include activity by its predecessor companies, where we have relevant information on the relevant predecessor companies.
- 8.67 We observed from the documents, by way of context, evidence of a number of behaviours which provided insight into how the Majors operate on the market and how they interact with each other. We noted that many of these behaviours were in themselves, at least to some extent, consistent with normal commercial behaviour (for example, some monitoring of own market share may be expected as normal business practice in many industries). However, we analysed these behaviours as part of establishing the backdrop against which other more problematic behaviours (see paragraphs 8.77 to 8.101) were occurring, given that the more problematic behaviours appeared to an extent to be enabled by these 'backdrop' behaviours. For example, whilst monitoring of market share and customer gains and losses may be normal practice in many industries, such monitoring also enables 'tit-for-tat' rebalancing.
- *'Backdrop' behaviours*
 - *Monitoring of market share and customer gains/losses*
- 8.68 The documents of Cemex, Hanson and Lafarge show a close monitoring of own market share (on a number of different or combination of bases including: monthly, yearly, in relation to cementitious as a whole, in relation to cement only at a national and regional basis).³⁷ They also indicate the monitoring of customers and volumes won/lost³⁸ and that one of the ways in which this information is used is to adjust monthly estimates of market share on an ongoing basis. We noted the level of detail that was collated as part of that monitoring.
- *Pricing transparency*
- 8.69 As discussed in Section 7, the Majors routinely issue general price increase announcement letters which set out the proposed increase to be implemented at a specified date (these letters do not specify a specific customer's current price nor what price the customer would pay based on the increase). The documents show that these price announcement letters are received by the RMX division of a Major and there is evidence that the employees in the RMX division have circulated the letter or relayed its contents to colleagues across business lines, including, where relevant, to the company's cement production/sales business line, or that such letters/their content have otherwise come into the possession of cement employees at a rival Major.³⁹
- 8.70 Final prices for each customer are agreed through negotiation with the customer. However, the documents also show that sometimes Majors receive information from

³⁶ See, for example, Appendix 8.2, paragraphs 33 & 247.

³⁷ *ibid*, paragraphs 12, 146, 222 & 271.

³⁸ *ibid*, paragraphs 49 & 50, 59, 146, 164, 271 & 275.

³⁹ *ibid*, paragraphs 186, 255, 257, 258 & 293.

their customers during discussions/negotiations as to a rival Major's intentions in relation to a price increase⁴⁰ or on a rival Major's specific price for that customer.⁴¹ Hanson commented that price increase letters could only provide imprecise, incomplete and often misleading information as they neither showed the actual level of increase achieved (which was negotiated) or the starting price. It also noted that prices agreed in the cross-supply deals between Majors would not give any indication of prices paid by other customers. While we recognize that the pricing information available is not perfect and does not provide systematic information on rivals' pricing at an individual customer level, we consider that the level of pricing transparency in the market reduces uncertainty as to rivals' behaviour in a material way and facilitates coordination (see paragraph 8.207).

- *Senior level contact*

8.71 For most of the Majors whose documents we reviewed we observe that there are senior level business contacts between the Majors in the context of cross-sales to one another, and through common business forums (eg CEMBUREAU, the European Cement Association). This contact may facilitate transparency in the cement market.⁴² The nature of such contacts is that they are unlikely to be fully recorded in the documentation we reviewed. We are not, therefore, in a position to assess the extent to which, and how, these result in increased transparency. There is evidence which appears consistent with senior officials discussing a future price increase on an occasion. It was reported internally at Lafarge in June 2008 that [Lafarge Senior Cement Executive] had been at the CEMBUREAU conference all week and was very confident that Lafarge would be able to lead a price increase.⁴³

- *Aggregate Industries*

8.72 The documents show that Aggregate Industries recognized it could leverage its supply options and the potential from imports during this period.⁴⁴ Aggregate Industries also recognized at that time its exposure through its lack of vertical integration into cement production and was concerned at the imbalance of its purchases from the GB producers versus its sales to the GB producers.⁴⁵ Aggregate Industries appears to receive favourable terms from Lafarge.⁴⁶

- *Cross-sales*

8.73 For Hanson, Cemex and Lafarge, the documents show that cross-sales of cement are very common during the time period covered by the documents (as noted in paragraph 7.228, the level of cross-sales between the Majors has since declined) and provide a high degree of transparency of rivals' production capacity including future intentions, as well as some transparency of rivals' cement pricing. Some links are made in the documents between the price paid for cement from another Major and the price at which cement is sold to that Major (ie an element of reciprocal

⁴⁰ *ibid*, paragraphs 184, 222, 253, 262 & 276.

⁴¹ *ibid*, paragraphs 212 & 220.

⁴² The MPA said that membership of the MPA was an entirely conventional step for any company in the sector and the MPA delivered all manner of legitimate benefits both for its members and those dealing with them or who are the ultimate beneficiaries of regulatory and/or industrial improvements brought about by its activities. The MPA said that it was very conscious of its responsibility to avoid facilitating any coordination of commercial behaviour. It said that membership of the MPA should not, absent other strong justification, be categorized as something with the potential to harm competition or which facilitates coordination. Our view on the role of common business forums in facilitating coordination is explained in paragraph 7.127.

⁴³ See Appendix 8.2, paragraph 169.

⁴⁴ *ibid*, paragraph 105.

⁴⁵ *ibid*, paragraphs 103–105, 115, 218 & 219.

⁴⁶ *ibid*, paragraph 97.

pricing). One document suggests that acceptance of price increases in the context of cross-sale arrangements can be viewed as a means of signalling between players as to broad intentions on price increases.⁴⁷

8.74 The documents, on their face, suggest some 'efficiency' justifications for cross-sales, ie that cross-sales occur where a rival's cement (or aggregates) plant(s) are located close to the Major's RMX plant(s) such that logistics (haulage) savings may be made by sourcing from the rival's plant(s) rather than self-supplying. It is also clear that cross-sales allow a degree of leverage in commercial negotiations between the Majors in respect of cement and RMX.

- *Role of vertical integration*

8.75 A number of 2008 documents note that the market is highly concentrated and vertically integrated.⁴⁸ The documents discuss on a number of occasions that this is the result of efficiencies but reference is also made to vertical integration having a role as a defence against imports.⁴⁹ The effect of vertical integration on the operation of the market is shown in the documents in a range of ways, including the opportunity for cross-sales and resulting transparency, plant swap arrangements and the option to use repatriation as 'retaliation' (see further below).

8.76 In a Lafarge strategy document for RMX from 2008, the cement market is presented as 'stable and controlled by the VI players'.⁵⁰

- *Behaviours suggesting shortcomings in competition*

8.77 We also identified from the documents a number of behaviours which together suggested shortcomings in the process of rivalry in the GB cement markets.

- *Market share strategy*

8.78 Importantly, we observe that the preservation of market share appears to be a metric of business performance for Hanson,⁵¹ Cemex and Lafarge.⁵² In various documents Cemex and Lafarge recognize the importance of maintaining market stability⁵³ or of 'balancing' volume between players. In one example, Lafarge recognized that there was no point in taking volume from Castle Cement only to have to concede it

⁴⁷ On 17 October 2008, [Cemex Senior Readymix Executive] emailed [Cemex Senior Executive], reporting on a meeting he had had with Lafarge representatives on that date. He notes that Lafarge wanted a price increase of £[redacted] per tonne for cement supplied to Cemex plants. [Cemex Senior Readymix Executive] had told Lafarge that Cemex would not commit to that price and so it would 'shop around'. However, the email recorded that [Cemex Senior Readymix Executive] considered that there was a 'high probability' of reaching a deal. On the same day, [Cemex Senior Executive] responded to the above email by inserting comments in the text. Following [Cemex Senior Readymix Executive] comment that Lafarge was seeking £[redacted] per tonne, [Cemex Senior Executive] stated : 'We take [redacted] if they take [redacted]. The more the better for me. I guess they say [redacted] but are thinking about [redacted]. Lets just make sure they do not get nervous with us, otherwise all price increases will go bust.' See paragraphs 277 and 278 of Appendix 8.2. Cemex explained that this correspondence was sent in the context of a meeting between Cemex and Lafarge in order to: (a) discuss commercial terms for the supply of cement and other products to Cemex's UK RMX operations; and (b) to explore the possibility of reducing the cost of haulage of cementitious products by reaching a reciprocal supply agreement with Lafarge in order for each party to acquire cement for concrete plants from nearer production facilities from the other party. Cemex told us that the latter proposal sought to reduce transport costs for both concrete businesses. Cemex noted that no agreements were reached in this meeting regarding either of the two issues discussed.

⁴⁸ See, for example, Appendix 8.2, paragraphs 33, 38(a), 105 & 147.

⁴⁹ See, for example, Appendix 8.2, paragraphs 27 and 28, 104 & 105.

⁵⁰ [redacted]

⁵¹ As noted in paragraph 8.58, during the period covered by these documents, there were some important acquisitions involving Hanson and its wider group. This observation covers Castle in the period prior to 2007 and Hanson in the period after its acquisition by Heidelberg in 2007 when Castle and Hanson became part of the same group.

⁵² See, for example, Appendix 8.2, paragraph 27.

⁵³ *ibid*, paragraphs 13 & 38.

elsewhere.⁵⁴ In another document, Lafarge discussed repatriation by Cemex of cross-sales volume in order to ‘balance the books’ and expressed frustration that Cemex had not provided compensatory volume it had promised Lafarge due to an earlier repatriation by Cemex.⁵⁵ The documents also demonstrate a number of episodes where Cemex appears to be seeking to gain an advantage⁵⁶ or is perceived by Lafarge to be behaving in a manner that is not consistent with Lafarge’s expectations.⁵⁷

- 8.79 A 2005 document sets out that Cemex considered that Lafarge ‘owed’ it value.⁵⁸ In September 2005 [Cemex Senior Cement Executive], emailed [Cemex Cement Employee] and other Cemex employees stating that (emphasis added):⁵⁹

I have spoken with [X] and he has agreed that we should look to take back ALL the volume we are going to lose to Lafarge as a result of the [X] and [X] aggression as soon as possible (ie now, before we lose it)

...

*Please can you arrange for the outstanding volume to be taken off Lafarge this week and make sure that all parties know why the change is taking place.*⁶⁰

- 8.80 [Cemex Cement Employee] emailed [Cemex Senior Executive] and explained that the ‘main bullets’ for Lafarge were that (emphasis added):⁶¹

- We are not looking to increase our market share of Cementitious.
- We see a tonne of ash being the same as a tonne of cement in market share terms.
- *We want cement prices to go up. your [sic] market leader and should be the same, so your actions in cutting our price to [X] by £[X] has not helped.*
- *We haven’t taken any external volume from you, however if you YET [sic]. However we don’t appreciate your actions [X], [X], and [X], this must stop.*
- *You are [X], we are [X]. You should be working with use [sic] to increase the prices of ReadyMix, your prices to [X] don’t help. The price I pay you is the highest I have.’*

⁵⁴ *ibid*, paragraph 61.

⁵⁵ *ibid*, paragraph 65.

⁵⁶ *ibid*, paragraph 225.

⁵⁷ *ibid*, paragraphs 65, 221 & 228.

⁵⁸ *ibid*, paragraphs 45 & 46.

⁵⁹ *ibid*, paragraph 47.

⁶⁰ We understood the reference to taking ‘outstanding volume ... off Lafarge’ as Cemex intending to take action against Lafarge by seeking to recoup volumes which it had lost to Lafarge through loss of particular customers. Moreover, the reference to communicating the reason why this was going to happen to ‘all parties’ was understood to include Lafarge. We noted Cemex’s statement that this was a reference to all Cemex’s UK managers that are involved in the production of UK concrete. However, in context we did not consider that this wholly reflected the reference in the email to communication to ‘all parties’. This view was confirmed by a subsequent email from [Cemex Cement Employee] to [Cemex Senior Executive] (Cemex) sent on 19 September 2005 discussed in paragraph 8.80.

⁶¹ See Appendix 8.2, paragraph 49. Cemex told us that [Cemex Cement Employee] was not in a position to give instructions to [Cemex Senior Executive]. Cemex told us that, according to the information available to it, [Cemex Senior Executive] did not communicate the information and comments contained in this document to Lafarge, nor did he discuss the topics mentioned in this email with Lafarge. We do not characterize this email as instructions, rather we consider that it provides evidence of how key Cemex employees understood Cemex’s commercial strategy at that time, even if these particular suggestions were not put into action.

- 8.81 Prior to the acquisition of Hanson by Heidelberg in 2007, Hanson did not have GB cement production capability. At the time of the Heidelberg acquisition, Castle Cement (a GB cement producer) became part of the same group as Hanson. In the 2008 document set, the earlier documents cover each of Castle Cement and Hanson separately, while the later documents reflect the period following the Heidelberg acquisition when Castle Cement and Hanson were part of the same group. In the following discussion, we set out our observations on the role of each of these players independently prior to the Heidelberg acquisition and then on the combined Castle Cement/Hanson group.
- 8.82 Before Hanson had GB cement production capability, Hanson and Lafarge had an arrangement described as ‘virtual vertical integration’ (VVI). This was captured as follows ‘VVI is effectively in place. If Lafarge Cement UK lose share to our competitors Hanson will replace such volume as is required to balance that share’.⁶² A March 2007 document suggests that after the acquisition by Hanson of Civil & Marine, Hanson considered that the model of VVI was no longer entirely appropriate. The document suggests that both Hanson and Lafarge wanted to explore a ‘wider VVI model’ including GGBS and OPC but recognized the ‘problems that might arise concluding such an arrangement’.⁶³
- 8.83 Before the acquisition by Heidelberg of Hanson, the documents show that Castle Cement had an arrangement with Aggregate Industries which involved Aggregate Industries effectively replacing volumes lost by Castle Cement to competing cement suppliers. One of the core conditions of a three-year agreement entered into in 2002 or 2003 was described as follows: ‘AI will replace plants lost be [sic] Castle to competing cement suppliers up to the targets volumes at prices to be agreed’.⁶⁴ The close nature of the relationship is also suggested in a document from 2006 relating to a UK strategic partnership review.⁶⁵
- 8.84 The later documents cover the period following Hanson’s acquisition by Heidelberg and running up to the internalization by Hanson of a large volume of cement. A focus on maintaining relative market position is demonstrated in a number of documents. For example, in one document from October 2008, [Hanson Senior Cement Executive], emailed [Hanson Senior Cement Executive], in relation to Castle Cement’s gains and losses stating (emphasis added):⁶⁶

... could you put together a summary by competitor where we have lost market share

We need to track closely gain or loss of share particularly with Lafarge as we internalise so that we do not over do things

I have been working on market share and we may not need to internalise as much as we think

I think cement market could fall as low as 9.6,

Therefore 2.4m is 25 per cent

At present our mat share is 22.8 per cent but august share is 21.5 per cent so share is dropping fast.

⁶² See Appendix 8.2, paragraph 72.

⁶³ *ibid*, paragraph 108.

⁶⁴ *ibid*, paragraphs 7–10.

⁶⁵ *ibid*, paragraph 90.

⁶⁶ *ibid*, paragraph 271.

- 8.85 The subsequent internalization event and related documentation is discussed in detail in Appendix 7.14 and summarized in paragraphs 7.230 to 7.238. We also set out some observations in paragraph 8.76 below from those documents in relation to tit-for-tat behaviour.
- *Price stability and price increases*
- 8.86 The 2008 documents—both emails and strategy documents—show that Lafarge, Cemex and Hanson view the market as being stable. Lafarge, as the strongest player, appears to identify a leadership role for itself and this is recognized by Cemex and Hanson.⁶⁷
- 8.87 In a 2005 presentation,⁶⁸ Cemex was concerned about the ‘expansion of some aggressive players’ such as Aggregate Industries and Tarmac, and the potential for importers to be ‘a major threat to price stability’. However, one of the actions which Cemex proposed to undertake in response to these concerns, as well as others, was to ‘Set strong discipline in the market to stick to the price increase’.⁶⁹ Cemex told us that the ‘market’ in this context referred to its customers, although we did not think this was clear on the face of the document.
- 8.88 The documents described in paragraph 8.87 above, together with a further 2005 presentation described below, indicate that Cemex saw market consolidation, price leadership and signalling, and ‘sticking’ to the price increase, whilst adhering to respective market shares, as the way in which it could ensure a ‘stable’ market in which to maximize profit. In the other 2005 presentation,⁷⁰ Cemex observed that in the cementitious market there was a ‘highly concentrated industry with *stable market positions* ... The Market Leader (Lafarge) with around 35% cementitious market share ...’ Moreover, the price dynamics of that market were described as involving the ‘Headline price increase [being] set by market leader’. Cemex explained that this price leadership (emphasis added):

...

Gives *indication of magnitude* of price increase and *sets tone* for price negotiation

Accepted by independent users

Nationals negotiate below the headline price

Bag cement price increase realised used by merchants to limit price increase for bulk cement

Industry trend to pass on supply chain cost reduction to customers

However, recent energy price trend partly basis for 2005 price increase

Major players announced a -£[x]/t headline price increase across the industry for 2005 -£[x]/t realisation in 2005 RMC budget

⁶⁷ See, for example, Appendix 8.2, paragraphs 38, 39, 49, 168, 169 & 181. In relation to Hanson, see Hanson’s comment in the fourth footnote to paragraph 8.89.

⁶⁸ See Appendix 8.2, paragraphs 33 & 34.

⁶⁹ *ibid*, paragraphs 36 & 37.

⁷⁰ *ibid*, paragraphs 38 & 39.

...

Bulk price follows bag price increase

Bag price increase announced in January, Bulk price increase announced in March

Bag cement price increasingly used as signal to the market of future bulk cement price.

- 8.89 The documents suggest there is a general understanding of when price announcements will take place. The documents are consistent with signalling between Lafarge, Cemex and Hanson⁷¹ as to what the general magnitude of the desired price increase will be. This signalling is achieved in a number of ways. The percentage increase is communicated by Lafarge to its customers, including the vertically integrated companies of its competitors. This information is often shared within the rival vertically integrated business. As noted above, there is evidence that, on receipt of the price announcement letters, the RMX division circulates the letter or relays its contents to colleagues across business lines, including, where relevant, to the company's cement production/sales business line. The firms also obtain information from third party customers, sometimes apparently volunteered and sometimes requested, as to rivals' price increase intentions. There is also one example of Lafarge specifically telling Hanson in 2008 of an intended price increase and the amount prior to the Lafarge price increase letter being issued.⁷² One document also suggests that acceptance of a rival's price increase in a cross-sales arrangement may be viewed as a signal around approach to increases.⁷³ There is further evidence that the Majors use and/or interpret price increase letters as a way of signalling pricing behaviour on a Cemex letter to Hanson (annotated by Hanson) dated 25 June 2008, but apparently circulated in early July 2008 in which Cemex announced its bulk products price increases. [Hanson Senior Executive], wrote handwritten comments on the letter addressed to [X] who we understood to be [Hanson Senior Cement Executive], stating:⁷⁴ 'I will need your team to toe the line. We should adopt and only you have approval to discount. However I need to hold as much as possible. We have had 2 clear messages now from Lafarge and Cemex.'
- 8.90 With respect to price increases, there is also evidence that in some instances Majors may have been aware of the intended approach of rivals to price increases in advance of the issuing of price increase letters. In particular, on 13 June 2008, [Lafarge Senior Cement Employee] emailed [Lafarge Senior Cement Executive], copying in another Lafarge employee, informing [Lafarge Senior Cement Executive] that he and the other employee had discussed the proposed price increase to have effect from 1 September 2008 and had concerns about the risks posed by this decision.⁷⁵ One of these concerns was that as 'market leader' Lafarge would be the subject of negative press coverage. However, [Lafarge Senior Cement Executive] responded stating that he had had a long discussion with [Lafarge Senior Cement Executive] and that (emphasis added): 'He's been at *Cembureau* all week, and is

⁷¹ Hanson became a GB cement producer in 2007, following its acquisition by Heidelberg and its integration with Castle Cement.

⁷² See, for example, Appendix 8.2, paragraphs 171 & 176.

⁷³ *ibid*, paragraph 278.

⁷⁴ *ibid*, paragraphs 185 & 186. Hanson commented that at that time cost increases were of an unprecedented magnitude and that it took its own decision to review its cement prices. In the days running up to Hanson's final decision on the relevant price increase, it received, in its capacity as a customer of Lafarge, notice of Lafarge's intended price increase. It said that although it had already taken its own decision to increase its prices, this market intelligence on Lafarge's proposed increase effectively constrained the level of Hanson's increase, since it did not want to lose business by being more expensive than the market leader (see further paragraph 8.208 in relation to the role of price announcements and cross-sales in market transparency).

⁷⁵ See Appendix 8.2, paragraph 168.

very confident that we will be able to lead an increase'. Accordingly, based on what he had been told, it would appear that [Lafarge Senior Cement Executive] believed that a price increase could be achieved despite [Lafarge Senior Cement Employee] and the other employee's concerns.⁷⁶

- 8.91 There is some evidence that Lafarge, Cemex and Hanson show 'restraint' during price increase periods or identify the need to show such restraint from competing. For example, there is a document in which Lafarge recognizes steps taken by [X] to balance volumes and the need for 'restraint' from competition during the price increase period. In an email sent on 16 September 2005, [Lafarge Senior Cement Employee], emailed [Lafarge Senior Cement Executive] with the subject line '[X] losses' and stated (emphasis added):⁷⁷

... I understand from our contact that the recent losses in [X] were implemented as a result of a direct personal instruction from [X] (not sure of spelling) to the [X] Area Director. The latter individual was told that the move was in response to our approaches to [X] and [X].

Just to clarify the situation the 2 customers approached us following meetings with [X] regarding the unplanned price increase in September – both of the individuals concerned were totally disaffected with their existing supplier and as a result they were going to move to imported material.

In view of [X] response do we wish to continue targeting the [X] supplied independent sector – my recommendation is that we should continue to force our competitor into repatriation prior to the Jan 1st price rise and then enter a period of truce whereby we do not disrupt the market increase.

I am preparing a further list of targets in preparation for our meeting on Wednesday.

- 8.92 In an email sent by [Lafarge Senior Cement Employee], to [Lafarge Senior Cement Executive], on 3 January 2008 [Lafarge Senior Cement Employee] provided an update in relation to the negotiation of that year's January price increase. With respect to Lafarge's competitors, [Lafarge Senior Cement Employee] observed that: 'All three UK competitors are demonstrating a degree of restraint at the present time, and seem to be striving to secure the price increase ...'.⁷⁸
- 8.93 On 18 June 2008, [Cemex Senior Cement Executive] emailed [Cemex Senior Cement Executive] informing him that [Lafarge Aggregates Employee] had called to tell him that Lafarge's [X] plants would move to in-house supply, ie it would be repatriated/internalized.⁷⁹ [Lafarge Aggregates Employee] apparently commented that Lafarge felt that Cemex had been:

... aggressive against them in the market. I pointed out to him that year-to-year date they have taken around [X] of business from us.

He also mentioned Lafarge Cement have instructed him that they are to implement a price increase. He asked whether we intend to do similar. I

⁷⁶ *ibid*, paragraph 169.

⁷⁷ *ibid*, paragraph 51.

⁷⁸ *ibid*, paragraph 124.

⁷⁹ *ibid*, paragraphs 164 & 165.

said that we are reviewing our cost base and as a valued customer he would know in good time any intentions on our part (I will report this in [X])

Following this news I have asked [X] to move the CX mortar plants in [X] to CX Cement supply – Hope this is OK.

- 8.94 Later that day, [Cemex Senior [Cement] Executive] responded stating that [Cemex Senior Cement Executive] should not to move the mortar plants just yet. [Cemex Senior [Cement] Executive] then forwarded the exchange to [Cemex Senior Executive] (again on the same day) stating (emphasis added):

Fyi...

LF cement moving [X] of volume inhouse.

We will keep our powder dry at the moment and focus on increasing prices rather than chasing volumes.

- 8.95 There is also some evidence that firms consider they are being undercut by rivals during the price increase periods and that they perceive this as deviation/unacceptable conduct.⁸⁰

- o *Tit-for-tat/rebalancing*

- 8.96 There is evidence that action is taken in certain cases to engage in tit-for-tat rebalancing where firms have lost a customer to one another. In referring to ‘tit-for-tat’ rebalancing in the context of our internal document review, we are describing the situation where Major A targets the customer of another Major, Major B, on the basis that Major B has won business from Major A or reduced cross-sales from Major A. This behaviour can be used to ‘re-balance’⁸¹ the volumes of business or market shares enjoyed by the Majors.⁸² Rebalancing can also be in the form of repatriating volume in direct response to a competitor gaining one of a firm’s external customers. However, it is clear that repatriation is driven in some cases by efficiencies and market conditions. Some of the evidence shows that there is an expectation that other players will take rebalancing actions in circumstances where it has ‘taken’ market share from rivals.⁸³ In some cases, the reason for the steps firms are taking in repatriating volume or targeting another GB cement producer’s customer appear to have been communicated to the rival.⁸⁴ We note that during this period the examples in the documents of ‘retaliation’ relate predominantly to contemplation of action by, or action by, Lafarge.

- 8.97 At other times, the language used indicates that, if business is taken from a competitor, a concession will have to be made elsewhere and the anticipation of reaction by a competitor is taken into account in considering how to act in the market.

- 8.98 In a 2005 Lafarge internal email, [Lafarge Senior Cement Executive] emailed [Lafarge Senior Cement employee] about ongoing price negotiations with Hanson.⁸⁵

⁸⁰ See, for example, Appendix 8.2, paragraphs 65 & 228.

⁸¹ We consider that in this kind of document the desire to rebalance market positions can be reflected in references to a range of proxies for share, for example references to tonnage or volumes. We are concerned with the existence of such balancing and not the precise use of terminology in such working level documents.

⁸² See, for example, Appendix 8.2, paragraphs 47, 51, 57 & 65.

⁸³ *ibid*, paragraph 146.

⁸⁴ *ibid*, paragraphs 47 & 164.

⁸⁵ *ibid*, paragraph 61.

[Lafarge Senior Cement Executive] observed that (emphasis added) ‘Hanson offered LCUK the Castle business – they see no value in buying from Castle. I responded that there are no prizes for me to take low price volume away from Castle *only to have to concede it elsewhere*’.

8.99 In an internal Lafarge email between [Lafarge Senior Cement Employee] and [Lafarge Senior Cement Executive], a recent gain of a customer previously supplied by Cemex was discussed followed by the observation (emphasis added):⁸⁶ ‘If we take this move together with the London Concrete Gerrards X volume *we will have taken c 60kt from Cemex – we must expect retaliation!*’

8.100 In a 2008 email, [Lafarge Senior Cement Executive] emailed [Lafarge Senior Cement Executive] to inform him that he had had dinner with [Cemex Senior Readymix Executive] the previous night. He informed him that the (emphasis added):⁸⁷

General tone of the meeting was OK, however, he commented that Cemex believe that they have lost share in RMX by 4% and in Cement by 2% and that they intend to recover this, which would explain the pricing activity we have seen at Ennstone and now at London Concrete.

*I commented *only that we have not gained share.**

2% of Cem I market is circa 240kt. We are ahead against Cemex in Gains and Losses by 20 to 30kt on a straightforward basis, but the performance of their own RMX (80% in-house supplied) plus the general market downturn might cloud their thinking.’

We need to keep a close watch on our independent customers, for those are now at risk of attack.

o *Imports*

8.101 The documents of each of Lafarge, Hanson and Cemex indicate a close monitoring of importers of cement and the costs of importing and reveal awareness of the potential constraint from increased imports.⁸⁸ In one document from 2005, a GB cement producer (Cemex) observes that importers could be a major threat to price stability.⁸⁹ The documents show strategic steps being considered or taken by certain GB producers to seek to contain or undermine individual importers or importers generally which would appear to go beyond normal competition on the merits.⁹⁰ For example, one GB Cement producer (Cemex) notes in a document prepared for it in association with an external consultant that it would need to verify if it could use its strong position in other countries to limit imports from those countries.⁹¹ We note also that there are a number of examples of acquisitions of importers being considered as a strategic move to reduce the constraint.⁹²

⁸⁶ *ibid*, paragraph 144.

⁸⁷ *ibid*, paragraph 146.

⁸⁸ *ibid*, paragraphs 27–30, 95 & 265–268.

⁸⁹ *ibid*, paragraph 34.

⁹⁰ See Appendix 7.5, paragraphs 65, 75–79, 83, 86–88 & 90 and Appendix 8.2, paragraphs 59 & 60.

⁹¹ See Appendix 8.2, paragraph 38(b). Cemex told us that there was no evidence that the recommendation to leverage Cemex’s position in other markets to prevent imports to the UK was ever undertaken. Cemex also told us in its [response to provisional findings](#) (paragraph 15.29c) that this document was prepared by an external adviser, and any recommendations were neither considered further nor put into action. In our view, this document provided direct evidence of an opportunity available to Cemex in relation to constraining the threat from importers.

⁹² See Appendix 7.5, paragraphs 83 & 87.

Documents relating to the 2009 internalization by Hanson

- 8.102 In late 2008 and early 2009, soon after the period covered by the 2008 documents, Hanson switched very large volumes of cement purchases for its downstream businesses from Lafarge to in-house sourcing ('the 2009 internalization event'). As part of our study of the 2009 internalization event (see paragraphs 7.230 to 7.238), we obtained documents from Hanson and Lafarge. These consisted mainly of correspondence, both internal and between Hanson and Lafarge, as well as correspondence with other Majors and customers produced in the context of the internalization event between autumn 2008 and spring 2009. We also obtained a limited number of strategy documents produced in the context of the internalization. Our detailed analysis of the 2009 internalization event, and of the documents obtained as part of this analysis, is presented in Appendix 7.14.
- 8.103 Our review of the documents relating to the 2009 internalization event identified evidence of examples of the tit-for-tat behaviour we also observed in the 2008 documents (see paragraphs 8.96 to 8.100). We identified evidence of Lafarge planning and taking tit-for-tat rebalancing action against Hanson, as a reaction to the loss of volumes experienced by Lafarge following the internalization by Hanson, as well as evidence of Hanson perceiving itself to be experiencing such tit-for-tat behaviour or anticipating that it would be subject to such tit-for-tat rebalancing behaviour as a result of recent gains it had made. In various documents, Lafarge comments on its options for retaliating against Hanson in response to the internalization and identifies Hanson customers as targets.⁹³ In various documents produced by Hanson, Hanson perceives its customers at risk of attack or under attack by Lafarge.⁹⁴
- 8.104 The review of documents also identified evidence on the way in which Lafarge considered tit-for-tat rebalancing constrained activity in the market. In a presentation sent by Lafarge's Cement [Senior Employee] to colleagues dated 05/01/2009 and entitled: 'Hanson action: High level- quick thoughts', the following observation was made: 'Fear of retaliation to recover volumes usually constrains actions- Do Hanson fear reprisal?'
- 8.105 In response to our having regard to the documents relating to the internalization event at all as part of our assessment of the market, only Cemex raised a particular concern. Cemex stated that it would not address the documentary evidence available to us which dated from prior to 2010 (ie including the documents relating to the internalization event) because it did not consider such documents to be relevant to any assessment of the GB cement market today in the absence of a conclusive finding in relation to those behaviours more recently.⁹⁵
- 8.106 As explained above, in order for us to properly investigate the GB cement market it was appropriate for us to assess the evidence available to us over a time period sufficient to allow us: (a) to properly understand how the market operates generally; (b) to take proper account of prevailing market conditions in our analysis of the documentary evidence; and (c) to identify patterns and trends in market behaviour across different market conditions and time periods which could provide important evidence as to how the market operates. Accordingly, we did not share Cemex's view that it would have been appropriate for us to disregard the evidence available to us from before 2010. On the contrary, we considered that the evidence of market behaviour available to us dating from prior to 2010, including that relating to the

⁹³ See Appendix 7.14, paragraphs 29, 30, 35 & Annex D.

⁹⁴ See Appendix 7.14, paragraphs 13, 16 & 18.

⁹⁵ [Cemex response to provisional findings](#), 7.22.

internalization event, could be properly relied upon in conjunction with the more recent evidence available to us in our assessment of the market (as well as the many other strands of evidence relied upon in our market outcomes assessment).

The 2012 documents and the strategy documents

8.107 We considered that it was important context to our evaluation of the 2012 documents that, immediately preceding and during the period when these documents were created, there were some very significant events in the market. In particular: (a) the industry had experienced a significant demand shock in the period from 2007 to 2009 due to the prevailing economic conditions—although there was some recovery in demand subsequently, this was not to pre-2008 levels; (b) Hanson’s internalization of large volumes of cement in 2008 had resulted in significant change to long-established trading relationships; (c) Anglo American and Lafarge were pursuing a JV in relation to their UK construction materials operations (including cement); and (d) in January 2012, the cement, aggregates and RMX markets were referred to the CC for investigation and report. We note also, as set out in Appendix 8.1, paragraphs 23 and 30, that Cemex provided only a very limited number of documents, citing its document retention policy.

8.108 In relation to the general ‘backdrop’ behaviours we identified in the 2008 documents, we also observed those behaviours in the 2012 documents.

- *‘Backdrop’ behaviours*
 - *Market share monitoring*

8.109 There is a high degree of transparency in relation to cement market shares. Lafarge, Cemex⁹⁶ and Hanson report internally on monthly estimates of their own market share.⁹⁷ There are also examples of estimates being made⁹⁸ of competitors’ market shares based on various sources.⁹⁹ Lafarge, Cemex and Hanson monitor gains and losses and¹⁰⁰ use their own gains/loss information as a source in preparing their market share estimates.

8.110 The strategy documents of Cemex, Hanson and Lafarge also show monitoring of market share:

- Cemex monitors market shares based on volumes of each Major and importers.
- The Lafarge annual strategy reviews assess Lafarge’s performance in cement on a national and regional (North, Midlands, South) basis, and show market shares of each Major and importers as a group over time on a national basis, as well as

⁹⁶ Cemex noted that the time lag in MPA market data did not allow Cemex to track its market share on a real time basis. We note that MPA data is provided one month in arrears and as such the information is available on a sufficiently timely basis to be used in monitoring of market share.

⁹⁷ See, for example, Cemex ‘Cement Commercial Updates’ in Appendix 8.3, paragraphs 342, 383, 388, 289 & 290. See, for example, Appendix 8.3, paragraphs 40, 46, 426 & 427, in relation to Hanson and Appendix 8.3, paragraph 382, in relation to Lafarge.

⁹⁸ See, for example, Appendix 8.3, paragraphs 203, 352 & 425.

⁹⁹ Cemex said that its own market share estimates were drawn from extremely imprecise data, including monitoring gains and losses and interaction with customers. Cemex argued that the degree of uncertainty inherent in such imprecise methods for monitoring market shares meant that Cemex was not able to track market shares of its competitors with a reliable level of accuracy. Hanson said that its data was reliant on customer feedback which could be imprecise. However, we set out in paragraphs 8.214–8.220 how we believe that the terms of coordination in the GB cement market can be monitored.

¹⁰⁰ See, for example, Cemex ‘Cement Commercial Updates’ in Appendix 8.3, paragraphs 342, 383 & 388. See, for example, Appendix 8.3, paragraphs 215, 286, 287, 306, 307 & 428, in relation to Hanson and paragraph 105 in relation to Lafarge.

market shares of each Major and importers as a group on a regional basis for the previous year.

- 8.111 In a number of Hanson documents, sales (volume of cement) and market shares (based on volume sold by Majors and importers) are presented at GB level, with some limited regional analysis. In some documents Hanson presents both overall market share for cement (ie including importers) and the market share of Hanson for domestically-produced cement excluding Tarmac (ie Hanson share in relation to Lafarge and Cemex only). Hanson also monitors its market share of all cementitious products. The documents show that Hanson has high awareness of cement competitors' costs and capacity, sales and market shares. There seems also to be good knowledge of the split of each competitor's cement sales between internal and external sales.
- 8.112 In its response to our provisional findings, Cemex observed that monitoring its own market share and 'estimate relative market share' compared with its competitors were two legitimate metrics of business performance among a number of others. We noted that due to the high degree of transparency in the GB cement market the GB cement producers are able to 'estimate' the market shares of their competitors with a high degree of accuracy.¹⁰¹ As set out in paragraph 7.128, the MPA publishes monthly data aggregated across GB cement producers on GB cement production and GB cement producers' sales of cement, with a one-month lag. Combined with data on its own sales and production, this information enables each GB producer to calculate its own monthly share of GB production and its own monthly share of sales by GB producers.
- 8.113 Moreover, we also observed that in and of itself the monitoring by a company of its own market share and the *estimated* market share of its competitors is a normal metric of business performance, hence our identification of market share monitoring as a 'backdrop' behaviour (see paragraph 8.67 above). However, in our assessment of the GB cement market we found that market share monitoring was an important 'backdrop' behaviour which facilitated other behaviours suggesting shortcomings in competition, such as tit-for-tat behaviour (see paragraphs 8.152 to 8.183), consistent with coordination (see paragraph 8.289).

- *Pricing transparency*

- 8.114 We observed a degree of transparency in relation to cement prices. Information on prices is gathered through discussion/negotiations with customers.¹⁰² Independent customers appear to be able to create a degree of competitive tension by playing off other suppliers (other GB cement producers and importers) against the relevant GB cement producer. This in turn gives the GB cement producer a degree¹⁰³ of transparency into rivals' pricing. Information is also gathered through the fact that cement producers are either customers or suppliers of each other. Price increase letters also appear to provide some visibility¹⁰⁴ into competitors' pricing aspirations.¹⁰⁵

¹⁰¹ [Cemex response to provisional findings](#), paragraph 7.23.

¹⁰² See, for example, Appendix 8.3, paragraphs 175, 177, 206, 245 & 255.

¹⁰³ Cemex stated that information from customers was largely unreliable, as customers were driven by their own agenda and often would misreport. Lafarge Tarmac also said that customer information was not fully reliable and that such information was customer specific, ie it did not give an indication of the price at which the competitor might be willing to supply other locations or more generally. Hanson said that such information was by its nature unreliable as customers were likely to have their own interests at heart. In our view, as set out in paragraphs 8.214–8.217, customer information is only one element contributing to transparency in the GB cement markets.

¹⁰⁴ See, for example, Appendix 8.3, paragraph 256.

¹⁰⁵ Hanson said that it might take many months for Hanson to understand what impact such letters might have had on pricing. Our views on the role of price announcement letters in facilitating coordination are set out in paragraph 8.208.

- *Senior level contact*
- 8.115 We continue to observe the existence of informal contact between senior personnel at Majors (eg corporate hospitality and through trade associations).
- *Cross-sales*
- 8.116 The level of cross-sales is less significant than during the period covered by the 2008 documents but continues to provide a degree of transparency.
- *Aggregate Industries' relationship with Lafarge*
- 8.117 The documents suggest that Aggregate Industries gets a favourable deal from Lafarge and that Aggregate Industries uses the threat of importing as leverage. Lafarge considers the favourable arrangement with Aggregate Industries as 'in lieu of imports'.¹⁰⁶
- *Vertical integration*
- 8.118 A number of the strategy documents of the Majors refer to vertical integration and its role in the sector. The annual Lafarge strategy reviews mention that Lafarge is the 'odd man out' in terms of vertical integration, that it needs to increase vertical integration (as competitors are more vertically integrated) and get a national footprint in RMX.¹⁰⁷ It is also noted in a document from 2008 that low vertical integration resulted from a desire to maintain leverage purchases (which we understood to be purchases of cement from other producers that could be used in bargaining) over other vertically integrated players.¹⁰⁸ Cemex documents suggest that vertical integration is a way to maximize asset performance and is a 'Key driver for competitors' in the RMX market.¹⁰⁹
- *Behaviours suggesting shortcomings in competition*
- 8.119 In relation to the behaviours of concern identified in the 2008 documents (see paragraphs 8.77 to 8.101), we made the following observations in relation to the 2012 documents and the strategy documents.
- *Market share strategy*
- 8.120 We made the following observations from the 2012 documents and strategy documents for each of Lafarge, Cemex and Hanson in relation to their market share strategies for the relevant period.

¹⁰⁶ See Appendix 8.3, paragraph 269. In its [response to provisional findings](#) (paragraphs 4.6–4.11), Aggregate Industries told us that any such 'favourable terms' that it received from Lafarge were normal commercial practice, and merely represented Aggregate Industries' strong bargaining position from its ability to supply cement through imports. Aggregate Industries refuted any suggestion its decision to contract with Lafarge was 'in lieu of imports'. However, the Lafarge document quoted here relates to Lafarge's view of the reasons for the favourable arrangements with Aggregate Industries and does not imply that this is the basis for Aggregate Industries' decision to contract with Lafarge.

¹⁰⁷ [REDACTED]
¹⁰⁸ [REDACTED]
¹⁰⁹ [REDACTED]

- o Lafarge

- 8.121 A number of Lafarge's strategy documents for the period 2009 to 2010¹¹⁰ state that its objective is to return to its pre-recession 2007 market share level. In the documents, Lafarge notes that the move by Lafarge's main GB competitors (Tarmac, Cemex and Hanson) to self-supply had resulted in a decline in Lafarge's GB grey cement market share from about 42 per cent in 2007 to around 36 per cent in 2009. In a 2010 strategy document,¹¹¹ Lafarge states that, as a result, 'the primary target for LCUK is to rebalance the impact of competitor VI actions and ensure GB market share is regained'.
- 8.122 In the context of a presentation¹¹² discussing the ways in which Lafarge could achieve a return to its 2007 market share level, Lafarge stated that (emphasis added): 'From a cement perspective, displacement of an import cement supply is most attractive to help avoid *any likely zero sum volume outcome associated with displacement of another major*'. We noted that Lafarge appears to envisage a 'zero sum' outcome if the volume it 'gained' was from another Major, ie if Lafarge won business from one of the other Majors. This reflects our observations in relation to tit-for-tat rebalancing discussed above in paragraphs 8.96 to 8.100 and below in paragraphs 8.152 to 8.180.
- 8.123 We noted that in the 2012 documents one of Lafarge's competitors considered that Lafarge was attempting to grow share in an attempt to enhance its market position ahead of the JV with Tarmac.¹¹³
- 8.124 Lafarge Tarmac said that given the extent of the current market downturn, it was natural that the focus of Lafarge in recent years had been to maintain volume rather than to grow market share. It said that market share was considered internally as one measure of business performance. According to Lafarge Tarmac, it was by no means the only or the predominant measure. Lafarge Tarmac said that its strategic and aggressive focus in recent years on cost reduction in an effort to maintain business performance had to be fully considered. Lafarge Tarmac argued that it was hardly surprising that producers had not sought to grow market share at a time when their focus had been on 'keeping their heads above the water'. It was not commercially realistic to assume that producers should be striving to grow market share in the depths of a recession when their clear strategic focus has been on cost reduction in order to maintain business performance.
- 8.125 Lafarge Tarmac also pointed out that a number of Lafarge's internal documents referred to the need to drive its market share back up to 2007 levels, ie up to around 42 per cent from around an actual share of 37 per cent in 2009 onwards. Lafarge Tarmac also said that it used volume and market share interchangeably.
- 8.126 In its response to our provisional findings, Lafarge Tarmac told us that evidence of certain Majors targeting market shares was not the same as an understanding between Majors that market shares should be stable.¹¹⁴ Lafarge Tarmac argued that target market shares were achieved through competitive activity (ie undercutting rivals). Further, Lafarge Tarmac submitted that, if there were an understanding on market shares, documents would refer to such an understanding, there would be no

¹¹⁰ [redacted]
¹¹¹ [redacted]
¹¹² [redacted]

¹¹³ See Appendix 8.3, paragraph 209.

¹¹⁴ [Lafarge Tarmac response to provisional findings](#), paragraph 11.

evidence of Majors having to fight against each other for market share, and there would be evidence of the voluntary ceding of market shares in certain instances.

8.127 However, we considered that targeting of market shares (whether maintaining or regaining share) was consistent with coordination on market shares. The internal documentary evidence on Lafarge, Cemex and Hanson's market share strategies is set out in paragraphs 8.78 to 8.85 and 8.120 to 8.151. We found no evidence of strategies of unconstrained growth in market share, rather the targets related to maintenance of existing share, returning to a previous share, or growth in share in a niche segment or in response to a specific event. As noted in paragraph 8.291, it would be unrealistic to expect to obtain direct evidence of all aspects of the coordination mechanism taking place. However, there is some limited internal documentary evidence relating to the voluntary relinquishment of customers—see the footnote to paragraph 8.291. As acknowledged in paragraph 8.57, internal documents do not provide a complete picture. However, other evidence (such as data on market shares over time) was also consistent with coordination on market shares.

8.128 In response to our provisional findings, Cemex noted that the internal documents showed that Lafarge was targeting its 2007 market share level, and Cemex argued that Lafarge was applying 'aggressive growth targets' in a depressed and mature market.¹¹⁵ Cemex said that we were wrong to categorize this market share goal as merely an attempt to recover lost share.¹¹⁶

8.129 As we have noted elsewhere, in a market with declining demand as occurred during the 2007 to 2009 period, a strategy aimed at maintaining market share would involve accepting reduced sales volumes. In the context of a demand shock, overcapacity and high fixed costs, we would have expected aggressive competition to maintain previous volumes rather than share (see paragraph 8.6). Accordingly, we did not agree with Cemex that a strategy of pursuing pre-2007 market levels, in the context of the dramatic market changes which occurred in the GB cement market, between 2007 and 2009, constituted the pursuit of aggressive growth. Additionally, our assessment of the evidence available on market share strategy from the internal documents only forms one part of our assessment of whether there has been coordination in the GB cement market. In particular, we would note the evidence outlined in paragraphs 8.152 to 8.183 which shows how the GB cement producers sought to rebalance their market shares through tit-for-tat behaviour.

- *Cemex*

8.130 As discussed in paragraph 8.107, we had limited internal documents from Cemex to consider for the 2009 to 2012 period because of its document retention policy.

8.131 Cemex's strategy documents did not suggest that Cemex was aggressively pursuing market share. Its strategy seemed to be most concerned with improving profitability via, for example, rationalization, optimizing vertical integration, pricing strategies, cost cutting, footprint, logistics, focusing on more profitable customer segments or product types.

8.132 In a 2010 business plan,¹¹⁷ it commented in relation to cement that its commercial strategy was 'Price based on product, proximity to competitor, technical requirements and trading history'. It stated that it was 'CX strategy to push bulk blended cements &

¹¹⁵ [Cemex response to provisional findings](#), paragraph 7.20.

¹¹⁶ *ibid*, paragraph 7.20.

¹¹⁷ 

maintain high margin bag sales (including the introduction of plastic packaged cement'. Similar statements are made in a 2009 business plan¹¹⁸ and in a 2011 forward-looking plan.¹¹⁹ It also commented in its 2010 business plan that there was a 'Lack of leadership' in cement.

8.133 We also noted that in an email sent by [Cemex Senior Cement Executive] to [Cemex Senior Cement Executive], [Cemex Senior Cement Executive] stated that (emphasis added):¹²⁰ [Cemex Senior Cement Executive] replied stating: [redacted].¹²¹ Cemex commented that this exchange showed that there was a debate between [Cemex Senior Cement Executive] and [Cemex Senior Cement Executive] as to whether to maintain market share or reduce prices. In this scenario it had decided to maintain current prices but it said that the fact that there was a debate on the point demonstrated that this was not a consistent strategy to maintain rather than grow share.

8.134 More generally, Cemex said that in some scenarios it might be difficult for it to grow share and hence steps were taken to consolidate share it had fought to obtain, but even then market share was only one factor taken into account in its commercial decisions. However, in other scenarios it was competing hard not only to win new customers but to grow market share. It referred to a number of documents showing examples of competition between Majors, and between Majors and independents. It said that this suggested that the Majors were attempting to grow share. It quoted one weekly Cemex report that referred to it targeting external gains and that the team was working to increase market share.¹²² It also referred to the fact that it had a market share target which had often not been met in the recent past and that, as such, it was during most periods trying to increase share to meet the target.

8.135 We reviewed the internal weekly reports which were available to us (which relate to the period of March to September 2012). The smallest market share identified by Cemex in those reports was calculated to be 21.0 per cent and the largest was 22.5 per cent. Market share appeared to be calculated on a monthly basis despite the reports being produced on a weekly basis. The market share target identified by the reports we reviewed was [20–25] to [20–25] per cent, and this did not change over the period covered by the reports available to us.

8.136 A Hanson internal email commented on Cemex's position in the market. In an email dated May 2011, [Hanson Senior Executive] commented that:

Cemex is outperforming across the board but they were underperforming across the board last year, so suggest that some of the gains come from a lower starting point than if they had performed with the market last year. Since they underperformed, it is likely they are going to push to get this back in 2011.¹²³

8.137 In response to our provisional findings, Cemex noted that: (a) the CC had allegedly observed that the internal documents of the GB cement producers disclosed that at times the market share strategy of Hanson, Lafarge and Cemex focused on maintaining market share;¹²⁴ and (b) the period over which we were analysing the market had been characterized by an 'enormous drop in demand'.¹²⁵ Cemex then

¹¹⁸ [redacted]
¹¹⁹ [redacted]

¹²⁰ See Appendix 8.3, paragraph 398.

¹²¹ *ibid*, paragraph 399.

¹²² In the report it was said: 'External gains continue to be our target and team working to increase our market share position'.

¹²³ See Appendix 8.3, paragraph 209.

¹²⁴ [Cemex response to provisional findings](#), paragraph 7.19.

¹²⁵ *ibid*, paragraph 7.19.

argued that preserving or regaining share was a competitive goal in the depressed market conditions, and in the face of what Cemex characterized as ‘aggressive competition’.¹²⁶

8.138 We noted first of all that in its response to our provisional findings, Cemex appeared to have accepted one of our observations on the market share strategies of the GB cement producers, ie that the internal documents disclosed an emphasis on maintaining or preserving, as opposed to growing, market share. Second, we noted that the documents displaying an emphasis on preserving or maintaining market share had to be read alongside the examples in the documents of an approach between GB cement producers of balancing positions between the rival cement producers—this is discussed more fully in the subsection on tit-for-tat behaviour below (see, in particular, paragraphs 8.152 to 8.183). Our observations on the market share strategy of Cemex, Hanson and Lafarge and on the other ‘backdrop behaviours’ discussed in this section represent only one part of our overall assessment of the GB cement market. Whether or not the maintenance of market share constituted a competitive goal as opposed to evidence of shortcomings in competition in the market depended upon our analysis of the whole body of evidence available to us.

o *Hanson*

8.139 Both the 2012 documents and the strategy documents show that at times during this period one of Hanson’s goals was to ‘recoup’ lost market share.¹²⁷ There is some evidence from the 2012 documents which suggests that Hanson’s market share objective in terms of market share was to achieve its 2008 level.¹²⁸ Hanson appears to have intended to increase its packed cement market share but not its bulk cement market share.¹²⁹

8.140 In relation to the document setting out the target of achieving its 2008 market share,¹³⁰ Hanson said that it was evidence of Hanson working to grow its market share from 20 per cent to something close to the 2008 levels of 23 per cent. It said that the figure of 23 per cent was a high-level aspiration in order to push its bulk sales team to make greater sales. It told us that it did not believe that it had matched this figure despite pursuing market share growth. It said that, while the CC appeared to view this as an attempt to recover lost share, the target was a high growth target. This was because the target level was the 2008 share, before losses of customers (particularly to importers) between 2008 and 2010. Cemex made essentially the same point in response to our provisional findings.¹³¹ Hanson said that this was evidence of the market being in a permanent state of flux. It told us that it showed that its senior cement executives had no predetermined idea what Hanson’s market share ought to be.

8.141 We note that the market share target set was a previous share level rather than Hanson seeking to maximize its opportunities for growth. Moreover, we also note in this context the points made in paragraphs 8.126 to 8.129.

¹²⁶ *ibid*, paragraph 7.19.

¹²⁷ See, for example, [§]. This document refers to business being gained and acknowledges that more is required to achieve market share increases. In the context this appears to be following a loss in volume. It identified a number of reasons for the decline in market share, the combined effect of which was said to be an impact of ‘1 – 2%% share’, and concluded ‘Circa 100K tonnes (c1%) additional volume required asap’.

¹²⁸ See Appendix 8.3, paragraph 17.

¹²⁹ *ibid*, paragraphs 20, 21, 27 & 45.

¹³⁰ *ibid*, paragraph 17.

¹³¹ [Cemex response to provisional findings](#), paragraph 7.20.

- 8.142 There are a number of references to Hanson having to try and increase its share 'by stealth', whilst also ensuring that Hanson did not make 'big gains that might destroy price'.¹³²
- 8.143 In relation to one of the references in the documents to growing 'by stealth', Hanson commented that this indicated an organic growth strategy that could take a couple of years to grow share. Hanson believed that there was considerable complexity and uncertainty in market transparency, allowing Hanson to grow share without being visible to competitors.¹³³ In relation to another document,¹³⁴ Hanson said that this related to packed cement and its strategy was to maintain a healthy margin and not jeopardize margin by chasing volume and market share. It explained that the strategy was to offer customers a competitive price but also to place a greater emphasis on Hanson's high level of customer service and quality. It commented that market visibility could be limited in that it could win business without it being visible to its competitors.
- 8.144 We consider it noteworthy that Hanson considered avoiding transparency to competitors of any growth in its share to be important.
- 8.145 In one email from July 2011, [Hanson Senior Cement Executive] said:
- Gents As you will know, our share for May dropped to concerning levels of 18.9%. I know there were reasons for this and we are carefully managing our approach to the market, but we must focus to get ourselves back to 20.5% consistently ... I need all four of us to ... get back on track intelligently whilst not crashing price or starting WW3.¹³⁵
- 8.146 Hanson told us that this email was evidence of a continually declining market share, which had resulted from Hanson's lack of prioritization of market share as an objective, Hanson having allowed market share to fall. Once, however, its share fell to below 20 per cent, Hanson told us that it became concerned at that time that it might then be losing its status as a significant Major, and so refocused its strategy at that time to try to make back some volume. Hanson also said that [Hanson Senior Cement Executive] was attempting to encourage the sales team to pursue more business, but not at the expense of price and profitability, thereby avoiding the situation in which the sales team drastically reduced its prices in order to chase volume. Hanson said this email was evidence that market share was expressly held by it as being subordinate to profitability.
- 8.147 However, some of Hanson's strategy documents state that Hanson's target was to retain share or that it recognized that it was not realistic to increase market share in the context of the prevailing market conditions.¹³⁶
- 8.148 Hanson said that from its point of view, market share was merely one metric of business performance, and margins and operating income were a far more important metric for Hanson.
- 8.149 Hanson said that we had failed to show what precise market share Hanson sought to maintain. Hanson told us that its market share had declined very significantly over time (see the footnote to paragraph 7.8) and as such there could be no consistent

¹³² See Appendix 8.3, paragraphs 17, 19 & 27.

¹³³ *ibid*, paragraph 17.

¹³⁴ *ibid*, paragraph 27.

¹³⁵ *ibid*, paragraph 226.

¹³⁶ 

market share to maintain. We explain the focal point for coordination in paragraph 8.289, but we do not consider it necessary for us to specify the precise share targets for each member of the coordinating group, since these might vary in response to changes in circumstances, and our assessment of the effectiveness of competition in these markets did not depend on our ability to specify these figures precisely. Hanson also made a number of comments in relation to our observation that there had been little evidence of any GB cement producer pursuing a strategy of organic growth. First, Hanson pointed to emails showing competition taking place as providing clear examples of where Hanson had worked to improve and grow within its operative markets. Second, Hanson pointed to data it provided on movements in Hanson's market share.¹³⁷ Finally, Hanson referred to data submitted showing customers targeted by both Hanson and Cemex month on month from June 2010 to December 2012 (by way of example) which Hanson argued demonstrated intense competition between GB producers.¹³⁸ We discuss in paragraph 8.228 that competition within bounds (for example, for the most profitable customers) is compatible with coordination.

8.150 Overall, we considered that there was evidence that at different times during the 2009 to 2012 period:

(a) Each of Cemex, Hanson and Lafarge wanted, in a limited manner, to increase its market share. For example, the targeted market shares often reflected market shares previously achieved by firms (in the case of Hanson and Lafarge) and/or the documents suggest that the desire for increased share may have been driven by specific events during that period (in particular, in the case of Lafarge the Lafarge–Tarmac JV) or the focus appears to be in relation to a specific segment (for example, Hanson in relation to packed cement).

(b) There was also evidence that at least Hanson and Cemex aimed on other occasions to maintain their respective market shares.¹³⁹

8.151 Moreover, as noted above, the observations on market share strategy must also be read alongside the examples in the documents of an approach between GB cement producers of balancing positions between the rival cement producers—this is discussed more fully in the subsection on tit-for-tat below.

○ *Tit-for-tat rebalancing*

8.152 As outlined above, in referring to tit-for-tat rebalancing in the context of our internal document review we are describing the situation where Major A targets the customer of another Major, Major B, or reduces cross-sale purchases from Major B on the basis that Major B has won business from Major A or has reduced cross-sale purchases from Major A. This behaviour can be used to 'rebalance' the volumes of business or market shares enjoyed by the Majors. We also recognized that different Majors may engage in this behaviour at different times and/or with differing levels of frequency depending upon a variety of factors.

8.153 From our review of the 2012 documents, we identified some evidence of certain GB cement producers: (a) planning, anticipating or undertaking tit-for-tat rebalancing action against competitors in the manner described above; (b) perceiving themselves

¹³⁷ This is discussed in Appendix 7.10.

¹³⁸ This is discussed in Appendix 7.9.

¹³⁹ We note that, in a market with declining demand as occurred during the 2007–2009 period, a strategy aimed at maintaining market share would involve accepting reduced sales volumes. In the context of a demand shock, overcapacity and high fixed costs, we would have expected aggressive competition to maintain previous volumes rather than share (see paragraph 8.6).

to be experiencing such tit-for-tat behaviour (ie due to gains made from another, Major A, Major B considers that its customers or business are being targeted in response by Major A); and (c) anticipating that it will be subject to such tit-for-tat behaviour because of recent gains it has made vis-à-vis another GB cement producer.

8.154 In the 2012 documents the weight of the examples identified are in relation to Hanson engaging in this behaviour. An example of (a) can be found in an email sent by [Hanson Senior Cement Executive] to [Hanson Senior Cement Executive] on 5 June 2011 in relation to Hanson's 'Market share and gains & losses'.¹⁴⁰ In his email, [Hanson Senior Cement Executive] detailed the volumes which Hanson Cement had lost to a range of competitors. Taken together, those losses were thought to constitute 0.64 per cent of the market. [Hanson Senior Cement Executive] stated that (emphasis added):

We obviously have to get business back with the others but if you include [X] the net loss to Lafarge for grey is 39,750 tonnes

I suggest the following Action plan

We identify *40,000 tonnes of Lafarge business to take* in the North (as we don't want to pick business up in Ketton) and take it quickly ...

We Identify *4,000 tonnes of Dragon business and take it quickly*

We Identify 5,000 tonnes of Dudman business and take it quickly

We Identify 1,300 tonnes of Paragon business and take it quickly

We look at Cemex carefully and factor in discussions between [X] and [X]

We look at the BLI strategy in light of the new supplies of white etc and extra ggbs sales to Tarmac before we make a decision.

8.155 [Hanson Senior Cement Executive] replied¹⁴¹ stating (emphasis added):

... Also remember on the packed business we took 10k tonnes from Cemex.

Agree with your plan re import losses- start immediately and get business back

After you have prepared a list of Lafarge targets we can discuss and decide – suggest you look North and South at first...

At this stage I suggest we do not attack Cemex

BLI – we will evaluate and maybe take some packed business

...

¹⁴⁰ See Appendix 8.3, paragraph 215. Hanson told us the email clearly demonstrated how Hanson sought to win volumes from across the market, as opposed to adopting a strategy of singling out the customers of a single competitor by way of a punishment mechanism. However, we considered that the email provided direct evidence of Hanson seeking to recover cement volumes from competitors according to the volumes those competitors had gained from Hanson.

¹⁴¹ See Appendix 8.3, paragraph 216.

- 8.156 In its response to our provisional findings, Hanson criticized our reliance upon the above chain of emails on the basis that we had focused on the 'linguistic features' of these emails, which was misguided and resulted in us using the evidence in a way which contradicted our conclusion on coordination.¹⁴² Hanson highlighted the fact that the email chain used the language of 'attack' and 'get business back' as evidence that our focus was on the linguistic features of the emails. This assertion is incorrect. In our review of the evidence, we focused on the evidence provided by both the language used and the substantive contents of the email chain in relation to the actions Hanson planned and anticipated taking in response to the loss of volumes to its competitors. This email chain is one example of Hanson planning to target the customers of its competitors directly by reference to the volume of business which had been lost to each competitor.
- 8.157 Another example of Hanson planning or engaging in tit-for-tat rebalancing behaviour is provided by an email sent by [Hanson Senior Cement Executive] to [Hanson Senior Cement Executive] on 29 June 2011, outlining the actions being taken in relation to the losses and gains from each of Hanson Cement's competitors.¹⁴³ In his email, [Hanson Senior Cement Executive] noted that Hanson Cement was now 'equal' with Cemex following gaining new business. He also observed that as Hanson had won some business from Lafarge, this meant that there was by then a smaller amount of volume to 'get back'.
- 8.158 Although Cemex was not to be 'targeted' in the context of the above email exchange, on 17 May 2012 [Hanson Senior Cement Executive] emailed¹⁴⁴ various Hanson cement employees stating (emphasis added):

In the last few days we have been attacked by Cemex ...

Please highlight the cells in green for ones we can get and orange for ones we are unlikely to get but will make Cemex go and have to defend the business by reducing prices.

Every time any of our competitors hits us I want to hit them back twice as hard so if Cemex make us defend an account I want make to also hit them at another account.

- 8.159 In September 2010, [Lafarge Senior Cement Employee], emailed [Lafarge Senior Cement Executive] others with the subject heading 'Cemex quote for [X]' and stating:

... Cemex appear to be making major play for [X] business. Their rationale seems to be two-fold, firstly to pick-up a [X] volumes in the Midlands and SE would match their aspirations and not compromise their packing capacity. Secondly the European dimension to their business is also attractive. [X] hinted that Cemex also have ambitions to grow their business with [X] in [X].

Whatever the motivation the prices offered are extremely low and undercut our own prices significantly. ... I guess we are faced with four options:

¹⁴² [Hanson response to provisional findings](#), paragraph 9.22.

¹⁴³ See Appendix 8.3, paragraph 220.

¹⁴⁴ *ibid*, paragraph 364.

- 1) Refuse to move our price and insist [X] honour the current Trading Agreement which runs out next July. [X] can accept this and we retain the business for the next nine months at which point I'm sure Hanson and Cemex [Email incomplete]
- 2) Also refuse to move our price and [X] switch some business to Cemex immediately. We would then get involved in a legal wrangle over the Trading Agreement, refuse to pay a hefty slug of rebate and break what until recently has been a very positive relationship.
- 3) Nullify part or all of the price increase announced for January to meet in part [X] demand.
- 4) Seek a compromise on the current prices now and leave the price increase in place for January (negotiation pending).¹⁴⁵

8.160 [Lafarge Senior Cement Executive] forwarded the above email to [Lafarge Senior Cement Executive] and stated that there was a 'significant issue with [X]'. [Lafarge Senior Cement Executive] replied¹⁴⁶ asking for [Lafarge Senior Cement Executive] (emphasis added) 'take on this opportunistic move and your recommendation. In the mean time *what is our counter attack position and when and where can you make it*'.¹⁴⁷

8.161 In an email from May 2012 [Cemex Senior Cement Executive] writes to a number of cement colleagues 'As you will see from the email trail *Lafarge have taken market share ... we must regain our lost share ... lets go for [Lafarge]*'.¹⁴⁸

8.162 In an email exchange from September 2012 titled 'Hanson attacks', [Cemex Senior Cement Employee] of Cemex writes to [Cemex Senior Cement Executive] that: '[role unknown] is experiencing a lot of attacks from the Hanson Rep in his area. It appears to be an isolated case as nobody else is reporting it. ... [X] is chomping at the bit to give him a taste of his own medicine. Are we ok to go ahead?' [Cemex Senior Cement Executive] responds: 'If we have defended and its cost me money go for it but be sensible. I will also be letting you off the leash on [X]'.¹⁴⁹

8.163 An example of categories (b) and/or (c) outlined in paragraph 8.153 is provided by an extract from a [Company X] document which appears to relate to May 2012. It is noted under the heading 'Price' that '[Company Y] are beginning to target us following recent gains'.¹⁵⁰ A further update document which appears also to relate to May 2012 states that '[Company Y] are quoting our customers aggressively following

¹⁴⁵ Appendix 8.3, paragraph 51.

¹⁴⁶ *ibid*, paragraph 52.

¹⁴⁷ Lafarge commented in relation to this document that the email invited [Lafarge Senior Cement Executive] to comment 'on an appropriate strategic response to competitive action by Cemex' although no distinction was made between a response to competitive action by Cemex and that of BLI, Dudman Group, CRH or any other supplier. According to Lafarge, the email correspondence shows that [Lafarge Senior Cement Executive] 'competitive reactions are the same regardless of the competitor to which Lafarge loses business or the product market in which that loss occurs'. See the second footnote to paragraph 8.289(b).

¹⁴⁸ See Appendix 8.3, paragraph 353.

¹⁴⁹ *ibid*, paragraphs 466 & 467.

¹⁵⁰ See Appendix 8.3, paragraph 342. [Company X] said that the 'gains' referred to were cement volumes previously supplied by [Company Y] that were taken in-house by [Company X] in [X]. It said that it was normal commercial behaviour for a cement producer which had lost volume, in this case [X], to seek to recover volumes. It said it had anticipated that [X] would target customers of all cement manufacturers, including [X] customers, and that this anticipated behaviour was what was reflected in the extract in the commercial report. See paragraphs 8.165–8.169 in relation to our observations from other 2012 documents of [X] and [X] actions following [X] internalization in [X].

our recent gains. This will have an impact on price going forward'.¹⁵¹ Under the heading 'Competitors', [Company X] noted:

[Company Y] have met with [X] with a view to regain business from ourselves. We gained this business [X].

[Company Y] have called a lot of our customers in last 7-10 days looking for new business.

[Company Y] have priced [X]. High risk of losing account.

8.164 Additionally, on 1 May 2012, [Company X Senior Cement Executive] [X] emailed¹⁵² [Company X Senior Executive] with the subject line '[X]'. [Company X Senior Cement Executive] stated: '[X] On that basis I will push the button for the RMX switches in [X] anyway as we cannot afford to wait. We should tell [Company Y] that we need to recover market share.'

8.165 [Company X Senior Cement Executive] then forwarded¹⁵³ this email to [a second Company X Senior Cement Executive] stating: 'Need to chat through with you before we press the button. I'm in [X] tomorrow'. On 6 May 2012, [the second Company X Senior Cement Executive] emailed¹⁵⁴ [the first Company X Senior Cement Executive] with the subject [X] stating (emphasis added):

I have just received a phone call.

[Company Y] have attacked our business at [X] and [X] following us taking [X]. [Company X employee] is meeting them this week and obtain details.

8.166 Later on 26 June 2012, [the second Company X Senior Cement Executive] emailed¹⁵⁵ [the first Company X Senior Cement Executive] stating (emphasis added):

... We now have better quality market share in [X] by going internal and ditching [X] of [X] but the attacks by [X] has put a big dampener on that plan.

I think we should take [Company Y] supplied plants off them in [X] and let [X] go. Also I might get better deal from [X] than [X]. I won't know until July so we should keep the volume for now. Also as market share is our chosen strategy then we should keep for now as in expecting further losses and a possible fallout with [X]. I'm meeting [X] next week ...

8.167 We understood the above emails as showing that:

(a) [Company X] internalized RMX cement supplies in [X] because it wanted to recover lost market share (and to obtain better 'quality' share).

(b) [Company X] then considered that [Company Y] responded by 'attacking' its business in [X] by approaching its customers.

¹⁵¹ See Appendix 8.3, paragraphs 383, 388 & 389.

¹⁵² *ibid*, paragraph 350.

¹⁵³ *ibid*, paragraph 351.

¹⁵⁴ *ibid*, paragraph 356.

¹⁵⁵ *ibid*, paragraph 399.

(c) [Company X] then in turn envisaged taking business off [Company Y] in [redacted] in response.

8.168 Tarmac commented in its own internal documents on the [Company X] internalization and [Company X's] response. On 6 June 2012, [Tarmac Senior Executive] emailed [Tarmac Senior Cement Executive] and [Tarmac Senior Executive] in relation to '[Company X] – [redacted]' and stated:¹⁵⁶ 'I was informed on Friday that [Company X] have repatriated all their cement in [redacted], with no prior warning. This will impact on [Company Y] circa 60K/T per annum so that means they will be looking for a home for the remainder of 2012 of approx 30K/T'

8.169 On 8 June 2012, [Tarmac Senior Executive] sent a further email to the same recipients with the subject line 'Cement Activity in [redacted]' and stating:¹⁵⁷ '[Company Y] have retaliated/responded by taking all the business off [Company X] for [redacted] and another independent. Things are moving quickly in the cement market in [redacted], now [Company X] are looking at a cement surplus.'

8.170 A further example of category (c) outlined in paragraph 8.153 is that in July 2012 Hanson was considering internalizing cement volumes which were then being supplied by Lafarge.¹⁵⁸ This option was being considered in the context of price negotiations between Lafarge and Hanson where Hanson was seeking a reduction in the price it paid Lafarge for cement. On 6 July 2012, [Hanson Senior Cement Executive], emailed a number of Hanson employees with the subject line 'Internalisation – Urgent' and stated (emphasis added):¹⁵⁹

... We are internalising 5 of the Hanson South West plants) which ones is yet to be decided) from Lafarge CEMI to our own CEMI from Monday or Tuesday next week

Please be on red alert as they will probably go into our customers to win the volume back

Please can you defend at every account and also let me know asap who you think many be vulnerable accounts in your areas ...

8.171 Additionally, we noted that there is evidence that Hanson considered that if it 'took' packed cement business from Cemex or Lafarge it would 'have to consider giving them concrete business'.¹⁶⁰ A later email suggests that Hanson planned to take a specific amount of volume of cement business from Cemex but would give Cemex the exact same amount of 'Hanson plants' business back to Cemex.¹⁶¹

8.172 In its response to our provisional findings,¹⁶² Cemex reiterated that in some cases it made rational sense to recover volumes from a supplier or a customer of a supplier to which Cemex lost volumes. Cemex said that there was no consistent trend identified by the CC to indicate that Cemex always attacked the customers of the supplier to which it has lost business. It said that Cemex and other suppliers were always seeking to win customers and pointed to various emails showing competition

¹⁵⁶ See Appendix 8.4, paragraph 36.

¹⁵⁷ *ibid*, paragraph 37.

¹⁵⁸ See Appendix 8.3, paragraphs 402–418.

¹⁵⁹ *ibid*, paragraph 406. Hanson provided background information to this email showing that the relevant internalization and transactions never occurred, and thus remained hypothetical in the context of what Hanson said were the ongoing uncertainties in the market. However, we considered that this email provided evidence of the commercial strategy and approach to the market adopted by Hanson, even if these particular plans were not put into action.

¹⁶⁰ See Appendix 8.3, paragraph 19.

¹⁶¹ *ibid*, paragraph 20.

¹⁶² [Cemex response to provisional findings](#), paragraphs 8.18–8.20.

between suppliers, and said that in the vast majority of cases these were not the customers of the supplier to which that supplier has lost business. Cemex also argued in its response to our provisional findings that it was not clear how coordination could be maintained where there was competition on the merits in some cases, because it would be impossible for Cemex to distinguish this behaviour from deviation from the alleged coordination.

- 8.173 We explain why we think a degree of competition between GB cement suppliers within bounds is compatible with coordination in paragraph 8.228. Moreover, we note that there is evidence that on a number of occasions members of the coordinating group signal that a deviation has been detected and responsive action will be taken (see paragraph 8.267). We also noted that there is evidence that GB cement producers anticipate or expect rebalancing behaviour when they make gains against their competitors, and also recognize or perceive themselves to be the victims of such action.
- 8.174 Moreover, we have considered the emails relied upon by Cemex (in Confidential Annex 2 to its response to our provisional findings) as evidence of competitive behaviour and amended, to the extent necessary, the chronology set out in Appendix 8.3 accordingly. Many of the documents relied upon already formed part of that chronology and/or also disclosed aspects of behaviour suggesting shortcomings in competition that had been identified in the documents previously included in Appendix 8.3. We did not consider that any of the documents relied upon by Cemex contradicted our assessment of the internal documents or our overall assessment of the GB cement market.
- 8.175 Lafarge Tarmac said that the language of retaliation used in internal documents referred to a wide range of unilateral, competitive responses to actions by all competitors. There was no distinction in the internal materials between ‘retaliatory’ responses to members of the alleged coordinating group and other cement suppliers. It said that we had failed to identify any factors that justified treating one act of ‘retaliation’ or competitive response as part of a coordinated punishment mechanism and another as a unilateral response.
- 8.176 In its response to our provisional findings, Hanson quoted the contents of paragraph 8.153 above and argued that this paragraph showed that we were relying upon ‘mere assumptions and indirect interpretations’.¹⁶³ Hanson then asserted that this paragraph amounted to an ‘implicit admission’ that we had therefore ‘not found any evidence of past or actively applied tit for tat behaviour’. This assertion is incorrect for the following reasons:
- (a) In the quoted passage, Hanson highlighted the use of the terms ‘anticipating’ and ‘perceiving’ as justifying its assertion. Yet, no reference is made to the fact that we stated that we had found direct evidence of the GB cement producers ‘planning’ tit-for-tat behaviour (see paragraph 8.153). For example, following our review of the 2012 documents we identified a number of documents in which senior Hanson employees directed their staff to engage in tit-for-tat rebalancing by reference to the sales volumes which had been lost to their competitors. We considered that such direct evidence of producers intending to take tit-for-tat rebalancing action is particularly clear evidence in support of our conclusion that producers have engaged in this kind of behaviour.

¹⁶³ [Hanson response to provisional findings](#), paragraph 9.21.

(b) As discussed in paragraph 8.57, we had to exercise an element of judgement in interpreting the documentary base available to us. In the exercise of that judgement, we considered that a body of evidence which showed that GB cement producers: (a) planned or directed their staff to engage in tit-for-tat rebalancing behaviour; (b) perceived the actions of their competitors in targeting their customers as amounting to such behaviour; and (c) anticipated being the subject of tit-for-tat rebalancing because they had gained customers from another GB cement producer, justified the conclusion that such behaviour had occurred.

(c) We also noted that our review of the 2008 documents, the strategy documents and the documents relating to the 2009 internalization event also supported our conclusion that GB cement producers have engaged in tit-for-tat rebalancing behaviour.

8.177 Hanson said in relation to the reference to emails using the language of retaliation that emails that showed aggressive sales staff attacking a competitor's customer base and using colourful language when incensed at suffering the loss of one of their own customers could be found in sales teams in any industry. Hanson said that the realities and context of each email must be taken into account. The emails had been sent by sales people under pressure to hit targets and facing increasing competition and the aggressive sales speak that such an atmosphere encouraged was not factored into the CC's thinking. Hanson argued that it was not fair to list such emails in isolation without a due assessment of whether the competition in the market was restricted to such practices.

8.178 In relation to the above comments, as noted above, our observations here are not focused on the language of 'retaliation', rather they are focused on the substance of observing tit-for-tat behaviour (ie where Major A targets the customer of another Major, Major B, on the basis that Major B has won business from Major A). Moreover, as noted above, we did not expect to see an entirely 'consistent' trend of evidence of this behaviour from any individual firm or from all firms. We note in particular in relation to Cemex the limited documentary email evidence available to us as a consequence of Cemex's document retention policy. In addition, it is not necessary for us to determine that a Major or GB cement producer 'always' engaged in tit-for-tat behaviour or that competition in the market was 'restricted to [the use of] such practices' in order for it to be a matter of concern. We acknowledge that there is evidence in the 2012 documents of both competition (see paragraph 8.194) and tit-for-tat behaviour.

8.179 What is striking from our review of the documentary evidence is that tit-for-tat behaviour (ie behaviour aimed at specifically recouping volume from a player who has taken a customer) appears to be a strategic focus for a number of the GB cement producers and is a systematic way of engaging in the market. We note that there are examples where the documents expressly suggest that the tit-for-tat response is not rational commercial behaviour, at least in the short term.¹⁶⁴

8.180 In our provisional findings, we noted that tit-for-tat strategies are not used by Lafarge and Hanson exclusively to cover actions against other members of the coordinating group (see the third footnote to paragraph 8.218(f) of our provisional findings).

8.181 In its response to our provisional findings, Hanson argued that evidence which showed that it attacked the customers of all of its competitors in response to losses of volumes showed that it was adopting 'an even more competitive approach to 'take

¹⁶⁴ See, for example, Appendix 8.3, paragraphs 165 & 166, and Appendix 7.14, paragraphs 6, 7 & 37.

[business] quickly' from the full body of competitors'.¹⁶⁵ In Hanson's view, it was 'illogical and somewhat muddled' to suggest that tit-for-tat behaviour was evidence of coordination by the GB cement majors when they also engaged in such behaviour against their other competitors. Similarly, Cemex argued that the correspondence relied upon above did not suggest that there was 'mutual recognition' that the behaviour was intended to correct a deviation from coordinated behaviour.¹⁶⁶ However, Cemex offered no analysis of the relevant internal documents disputing our assessment.

8.182 As we stated in our provisional findings, we do not consider it surprising that the same approach to engaging in the market spills over into interactions with other rivals. In our view, what is significant is that:

- (a) when one member of the coordinating group engages in tit-for-tat rebalancing against other members of the coordinating group, there is a mutual recognition that this is an action to correct deviation from a coordinated approach or to balance volumes between firms; and
- (b) following a loss of business to a rival, the members of the coordinating group focus upon regaining the amount of volumes which had been lost to that rival through specifically targeting their customers. They do not simply seek to take business from the 'full body of competitors', contrary to what Hanson asserted.

8.183 In any event, in our review of the internal documentary evidence we simply observed qualitative evidence of tit-for-tat behaviour taking place. This qualitative evidence is considered alongside a range of other evidence in our overall assessment of competition in the GB cement markets.

- o *Price increases*

8.184 With respect to the 2012 documents, there appeared to be less proximity in the timing of the implementation of price increases than is observed in the 2008 documents. As would be expected in light of the economic conditions during the relevant period, there is also substantial evidence of customer resistance and of GB cement producers having to adapt proposals in negotiations.

8.185 However, we noted that, despite the customer resistance to price increases during the period covered by the 2012 documents, it would appear that the Majors were able to achieve price increases even if they considered that the increase achieved was 'limited'.¹⁶⁷

8.186 We also noted that in one strategy document looking at a review of pricing strategy in cement, [Company X] describes itself as 'price followers; usually second to announce; announcement higher than competition; pushing towards maintaining pricing levels as much as possible'.¹⁶⁸ In another document, [Company X's] 'long-term price strategy' is given as: 'Follow Lafarge above their announced increase' and 'Look for opportunities to Increase reciprocal trading', as well as 'Increase share in packed cement (high margin)' and 'Increase share in growing and niche markets'.¹⁶⁹ We noted that [Company X's] description of this price strategy reflected the market leadership role ascribed to Lafarge in the 2008 documents, discussed above in

¹⁶⁵ [Hanson response to provisional findings](#), paragraph 9.22.

¹⁶⁶ [Cemex response to provisional findings](#), paragraph 8.18.

¹⁶⁷ See, for example, Appendix 8.3, paragraphs 95 & 100.

¹⁶⁸ 

¹⁶⁹ 

paragraphs 8.86 to 8.90. It also noted in a 2010 plan¹⁷⁰ that ‘Cementers announce increases in Q4 for following Q1 implementation. Attempts for more than one increase a year have failed’.

8.187 [Company Z] appears to have considered itself to be a ‘market follower rather than market leader’.¹⁷¹

8.188 One document from Tarmac includes an exchange with [an importer] in which the importer provides a commentary, as an active market participant, on how it perceives the GB cement market to operate. On 28 June 2011, [an importer] emailed [Tarmac Senior Cement Executive] stating as follows (emphasis in the original):¹⁷²

I just thought I would ask of you to pass on some news which you should be immediately aware of.

I without hesitation attach a copy of my firms generic increase letter from July 4th to our clients for your attention.

I thought we were all trying from July 4th 2011 to ensure sale prices rise and we ALL can put a little stability back into our Industry as we have lost our control of the client base and they are telling us what we are doing with our business.

I write to inform you that we had a discussion today with a fixed outlet [X] which we, yourselves and Cemex all serve, they spread their business and credit around.

We are faced today with the fact that your local team has informed [X] this week that Tarmac will not be implementing any increases to [X] from 1st July, in fact you are not the only ones, Cemex have offered the same.

As majors you have responsibility to act responsibly in the market and set by example as it makes a complete mockery of your status and in front of others majors when they are made aware.

Do not think for one minute that this is stopping with you, I will also be holding Cemex to account on this same issue also as if we all do not do something about the huge decline in our margins, our businesses shall be in ruins and our industry disgraced and destroyed.

I would like to know what you are prepared to do about investigating your Sales Team acting in such an unprofessional and anti-competitive manner and get to the bottom of what actually has been said and why and maybe let me know.

We are also very aware that Clients also lie as they have been able to con us all against one and other in the last two years and if Tarmac have no control of what is being said or done in your name, you need to know, likewise if we have a rogue client, this also needs to be known by us all

¹⁷⁰ [X]

¹⁷¹ See Appendix 8.3, paragraph 22.

¹⁷² See Appendix 8.4, paragraph 26.

Every major should set the example and be proud of doing so and I for one will make my business stand up and play its part now and in the years to come – will you ?...

- 8.189 We note that Tarmac responded by letter dated 30 June 2011 strongly refuting any suggestion that Tarmac Group had engaged in any agreement or understanding contrary to competition law.¹⁷³
- o *Imports*
- 8.190 Importers of cement are closely monitored.¹⁷⁴ The documents make reference to the constraint from importers and include examples of GB cement producers losing customers to importers in some cases or having to drop price to defend an account against importers. There are several documents that refer to importers creating downward pressure on pricing and/or importers affecting firms' abilities to increase prices.¹⁷⁵
- 8.191 The threat of imports is mentioned in several Hanson strategy documents.¹⁷⁶ The threat of imports is also mentioned in a number of Cemex strategy documents: 'Importers a growing threat (11% share in 2010) including [redacted] (2%)'.¹⁷⁷ One document states that 'Price potential in UK needs to consider potential imports', and gives a price ceiling due to imports of £[redacted]–£[redacted] FOB.¹⁷⁸
- 8.192 There are examples of steps being considered, and in some cases taken, by Cemex, Hanson and Lafarge to react against this threat which appear to go beyond simply competing on price/better service etc, including:
- the possible purchase of [redacted] UK operations by Lafarge;¹⁷⁹
 - action by Lafarge against [redacted] in Ireland because of imports to GB;¹⁸⁰
 - action by Lafarge against [redacted] in Northern Ireland because of imports to GB;¹⁸¹
 - targeting of [redacted] by Hanson;¹⁸²
 - targeting of [redacted] by Hanson and Hanson considering wider European options to target [redacted] in response to actions by [redacted] in relation to customers in the market and [redacted] supply;¹⁸³
 - targeting of [redacted] by Cemex;¹⁸⁴ and
 - targeting¹⁸⁵ of [redacted] by Hanson.¹⁸⁶

¹⁷³ See Appendix 8.4, paragraph 27.

¹⁷⁴ See, for example, Appendix 8.3, paragraphs 83, 108 & 435.

¹⁷⁵ *ibid*, paragraphs 108, 252, 254 & 278.

¹⁷⁶ For example, [redacted].

¹⁷⁷ [redacted]

¹⁷⁸ [redacted]

¹⁷⁹ See Appendix 8.3, paragraph 32. In this document Lafarge considers the possible acquisition of [redacted] cement import terminal in [redacted]. It identifies the main driver as the purchase of market share and states 'With other players benefiting from improved market structure', observing that '[redacted] is active in [redacted] area and may improve his rationality and reduce pressure on prices.' Lafarge noted that this acquisition proposal was not pursued by Lafarge.

¹⁸⁰ See Appendix 8.3, paragraph 108.

¹⁸¹ *ibid*, paragraphs 165–167.

¹⁸² *ibid*, paragraphs 296–299.

¹⁸³ *ibid*, paragraphs 279, 282–284 & 439.

¹⁸⁴ *ibid*, paragraphs 466 & 467.

8.193 We also observed an example of an agreement between Hanson and Cemex whereby Cemex promised Hanson to stop GGBS imports from Germany to the UK and buy GGBS exclusively from Hanson.¹⁸⁷

- *Price competition*

8.194 The documents include many examples of price competition taking place with GB cement producers noting that they have been undercut by other GB Cement producers or importers and have either lost accounts or had to reduce their price to defend.

8.195 Hanson commented that we had not done a detailed analysis of the documentary evidence of competition taking place.¹⁸⁸ It pointed to the small percentage of emails we analysed in detail and suggested that the remainder, representing the overwhelming majority, displayed clear and strong competition between the GB cement producers and importers. Hanson told us, for example, that our entire body of email analysis with regard to business between Hanson and Lafarge (for the period for which we requested internal documents, ie 2010 to 2012) included thousands of emails showing strong competition between Hanson and Lafarge and none of concern with regard to the ongoing market review.

8.196 However, as a preliminary point we would note that it is not the case that the remainder of the emails each showed clear and strong competition. We identified particular documents of concern. There are other documents which provide evidence of competition taking place (and some of those are included in our chronologies in Appendices 8.3 and 8.4). We note below that there are many examples in the emails of price competition taking place. We discuss in paragraph 8.228 that competition within bounds is compatible with coordination. There are also, however, a range of other documents that fall into neither of those categories. In this case we are not using qualitative documentary evidence alone to assess the balance between coordination and competition during a period, nor as the most important indicator. The market outcome evidence summarized in paragraphs 8.3 to 8.7 demonstrates clearly that competition is not working effectively in the GB cement markets.

8.197 Hanson commented that if retaliation represented a successful punishment mechanism or a mechanism to exclude or minimize the impact of the competitive fringe, one would expect intermittent and rare outbreaks of competition and retaliation rather than a continuum of competition. Hanson told us that it had clearly demonstrated the contrary, in that the mutual attacks on common customers were continuous and monthly, for example as shown between Hanson and Cemex, as opposed to following the intermittent retaliatory model that Hanson said we suggested. We address Hanson's argument in paragraph 8.263 and we also set out in paragraph 8.228 why competition within bounds is compatible with coordination.

8.198 Hanson observed that in all the emails there was not a single instance of a direction being given to the sales force or of any general sales strategy to avoid seeking

¹⁸⁵ Hanson said in relation to action against [X] that it was implicit in our analysis that 'retaliation' against a GB cement producer amounted to a punishment mechanism, whereas here it appeared to mean an exclusionary mechanism targeted at an importer. Hanson argued that we were therefore taking an inconsistent approach. We do not agree. As set out in the second footnote to paragraph 8.289(b), the same type of behaviour is capable of serving more than one purpose.

¹⁸⁶ See Appendix 8.3, paragraphs 73 & 74.

¹⁸⁷ *ibid*, paragraph 117.

¹⁸⁸ In its [response to provisional findings](#) (paragraph 4.14 and Annex 2), Cemex made a similar argument and provided excerpts from Cemex's internal documents which Cemex said showed GB cement producers and importers competing hard for customers and market share. We noted that the documents in Annex 2 also showed high levels of (a) monitoring of gains and losses, and (b) awareness of which rivals volumes were being won from and lost to (ie transparency of customer-supplier relationships).

business from the customers of other key cement producer competitors. Hanson argued that, were the model and mindset of coordination to exist in the manner we claimed, one would expect to see regular and numerous examples of such emails in the form of directions ordering sales staff to refrain from going into business areas/ customers which might prove of concern to (in the case of Hanson) Lafarge or Cemex. According to Hanson, the fact that such emails and directions were absent was crucial and would lead any objective assessment to conclude that there was no evidence of sales teams being directed to avoid the customers or areas of the producer competitors.

- 8.199 However, we did not consider that we would necessarily expect to see such express directions, particularly in an industry where a strategic approach to interacting in the market aimed at coordination has endured over time. In this section and in Appendices 8.2 and 8.3 we describe documents in which Cemex, Hanson and Lafarge adapt their behaviour in the market to achieve a coordinated outcome. We note that, within that document set, there are emails in which directions are given either to attack or not to attack a particular rival, in response to customer losses to that rival. We also see evidence of competition taking place and are not suggesting that competition is entirely eliminated. We discuss in paragraph 8.228 that competition within bounds is compatible with coordination.

Conclusions from internal documentary evidence

- 8.200 We considered it important to use the documentary evidence to assess the way the market was operating over time and not at a particular point in time. We note that, as well as the three categories of documents discussed in this subsection, we have also taken into account the 2009 internalization documents discussed in paragraphs 8.102 to 8.106. We sought to identify what all these documents overall told us about the dynamics of the cement market over time, having considered each set of documents in the context of the conditions prevailing during the particular period they capture.
- 8.201 When assessed on that basis, we consider that the documentary evidence is consistent with a market in which, over time, although some competition is taking place,¹⁸⁹ coordination by some market participants (namely Lafarge, Cemex and Hanson) is also taking place. The documents suggest that the balance between coordinated and competitive behaviour is not constant throughout the period we investigated and may be influenced in part by market conditions. They also show that attempts to achieve coordinated outcomes are not always wholly successful.

The mechanism for coordination

- 8.202 Given the evidence from the internal documents showing the existence of coordination in the GB cement markets, we next considered in more detail the mechanism for coordination. In other words, we assessed how coordination was taking place in practice. In doing so, we examined the susceptibility of the GB cement markets to coordination and how the three conditions for coordination to be sustainable (as set out in paragraph 250 of the Guidelines) are met in those markets.
- 8.203 Paragraph 250 of the Guidelines states that:

¹⁸⁹ A degree of competition within bounds is compatible with coordination for the reasons set out in paragraph 8.228.

Three conditions are necessary for coordination to be sustainable in a market:

- (a) Firms need to be able to reach an understanding and monitor the terms of coordination. Where there is no explicit agreement, firms need to have sufficient awareness of each other and be able to anticipate each other's reactions so as to identify a mutually beneficial outcome.
- (b) Coordination needs to be internally sustainable among the coordinating group—ie firms have to find it in their individual interests to adhere to the coordinated outcome; the firms must lack an incentive, or have a positive disincentive, to compete because they appreciate how each other will react. However, coordination does not need to be perfect or continuous to fulfil this criterion ...
- (c) Coordination also needs to be externally sustainable, in that coordination is unlikely to be undermined by competition from outside the coordinating group or from the reactions of customers.

Ability to reach an understanding and monitor the terms of coordination

8.204 The Guidelines state¹⁹⁰ that the following structural characteristics may help firms reach an understanding and monitor the terms of coordination: a non-complex and stable economic environment; simple and relatively undifferentiated products; customers with easily identifiable characteristics; firms that are relatively symmetric (although coordination may also be possible in markets displaying elements of asymmetry); firms with cross-shareholdings, participating in JVs with each other and/or in reciprocal supplier/buyer relationships; the need of firms to make a long-term market commitment; and the existence of institutions and/or practices facilitating the sharing of information.

8.205 We first consider the extent to which firms would be able to reach an understanding on the terms of coordination in GB cement markets (and what the 'focal point' for coordination would be), and then we consider the extent to which firms would be able to monitor the terms of coordination.

- *Reaching an understanding*

8.206 We have found a number of factors that contribute to transparency in the GB cement markets, and that therefore also contribute to the ability of firms to reach an understanding on the terms of coordination:¹⁹¹

- (a) The market is highly concentrated (see paragraphs 7.6 to 7.16), which means that firms are likely to have high awareness of each other's actions.^{192, 193}

¹⁹⁰ The Guidelines, paragraphs 252 & 253.

¹⁹¹ Many of these factors are mentioned in paragraph 252 of the Guidelines, and some are additional.

¹⁹² Cemex told us that concentration in the GB cement markets had been reducing since 2007, as a result of the increase in the share of importers and of Tarmac, and would further reduce following the entry of HCM. We noted, however, that the number of GB cement producers had remained unchanged over this period despite the entry of HCM; that the total share of cement importers of all cement sales (which we considered to be the relevant measure, given that we believed coordination to be taking place around share of sales of all cement) remained low; and that the collective share held by importers had remained stable between 2009 and 2012 (see Table 7.1). Further, even after recent market developments, the GB cement markets will remain concentrated.

- (b) Given the very large sunk investments needed to enter the market and the long economic life of the key assets (see paragraph 7.51 and Appendix 7.7), firms must make a long-term market commitment, which in turn means that interactions between firms continue over many years.
- (c) The environment in which cement producers compete is not particularly complex: cement is a largely homogenous product (see paragraph 7.21) which can be transported over large distances (see paragraph 7.22); there is a large amount of stability in the customer base for cement (see paragraph 7.27); there are only a limited number of cement plants in GB (see paragraph 2.48) and high barriers to entry into GB cement production (see paragraph 7.51); the production processes for cement are largely similar and the cost structures of the various cement producers are also relatively similar (see paragraph 7.130).¹⁹⁴
- (d) The GB cement producers are engaged in various JVs with each other (see paragraph 7.127), are members of the same trade associations (see paragraph 7.128) and, more importantly, purchase and/or sell cement to each other (see paragraph 7.228—although less so now than in the past). All these factors are likely to increase transparency in the market and provide channels for communication between the GB cement producers.
- (e) There is a high amount of transparency for each GB producer of its own market shares on a monthly basis (through MPA data—see paragraph 8.215), and on annual production by plant and yearly market shares by plant through EU ETS data (see Appendix 7.3).¹⁹⁵

8.207 Although prices paid by individual customers to competitors are not transparent to each GB producer because they are individually negotiated, there appears to be a degree of transparency in prices because (a) information on cement prices can be gathered through discussions with customers (see Appendix 7.3) and (b) some prices are directly observed because cement producers are either customers or suppliers of each other (see paragraph 7.228). Moreover, there is considerable transparency in the price increase announcements of the cement producers (see paragraphs 7.189 to 7.204).

8.208 Therefore we found that coordination is likely to evolve mainly around share of GB sales made by the GB producers (ie for each producer, the focal point is its own share of GB cement sales, as a proportion of total cement sales made by GB producers),¹⁹⁶ but may be supplemented with the information on prices which can be

¹⁹³ Hanson told us that the cement market contained a large number of players and new entrants if importers were included, making coordination impossible. However, we noted that there were only four GB cement producers which collectively held a large share of cement sales, making the market concentrated.

¹⁹⁴ Hanson told us that the extreme declines in demand for cement made any model of collusion both unsustainable and highly unlikely to succeed, and that the implications of such declines were clear in the economic literature. We noted that, although unpredictability in long-term demand for cement was likely to affect capacity decisions, it was unlikely to affect pricing decisions which are normally based on shorter-term considerations. In addition to this, we analyse in paragraphs 8.294–8.303 the variations over time in the evidence base and explain how we have taken this into account in forming our conclusions.

¹⁹⁵ Cemex told us that, because EU ETS data was annual and published in arrears, it did not contribute to the ability to coordinate. We agreed that EU ETS data was unlikely to be the primary source of information used for monitoring—we set out our views on how monitoring is achieved in paragraphs 8.214–8.220. However, we thought that the availability of EU ETS data would nonetheless be a valuable cross-check on the accuracy of other information used for monitoring purposes (ie estimates of own share and other firms' shares derived from MPA data and monitoring of wins and losses) and would contribute to increased levels of transparency in the market on individual plants' production volumes and costs, particularly variable costs. The evidence that firms are in fact able to use ETS data for this purpose is set out in Appendix 7.3.

¹⁹⁶ We have not found evidence to explain how the accepted shares of sales for each coordinating firm are initially arrived at. We did not consider that the focal point for coordination was capacity nor that the accepted shares of sales for each coordinating firm were mechanically derived from each firm's capacity. An understanding on accepted shares of sales may have been reached before the period of time covered by our investigation. Although our investigation has focused on the period since 2007, there was evidence from both the internal documents and the other quantitative sources of information and data available

gathered through discussions with customers and in the context of cross-sales, as well as through price announcement letters. While we did not find coordination on price to be likely (as prices are individually negotiated), we considered that the price announcement letters facilitated price parallelism in the GB cement markets¹⁹⁷ (consistent with our analysis—see paragraphs 7.212 to 7.223¹⁹⁸) and also softened customer resistance to price increases (see paragraph 7.210).¹⁹⁹ When we refer to coordination on ‘share of sales’ in the remainder of this report, we mean coordination on share of GB sales made by the GB producers.

8.209 In their responses to our provisional findings, Hanson commented on relative market shares as a focal point for coordination, and Lafarge Tarmac and Cemex commented on our view of the role of price announcement letters in coordination.

8.210 Hanson told us that the relative market shares of the GB cement producers had moved differently over time, with Cemex’s share remaining flat or even increasing in relative terms, and Hanson’s share declining. Hanson also told us that these relative shares of GB cement producers were not the common metric used by Hanson in periodic reviews, and that on the occasions in any of Hanson’s business reviews that importers were excluded when considering shares, this was for the express purpose of monitoring the ever-growing share of imported cement.²⁰⁰ We considered stability in market shares over time in paragraph 7.8; we found that, even though there were some changes in relative market shares of GB cement producers over time, these changes had been limited despite the large changes in cement demand, capacity and costs between 2007 and 2011. In relation to Hanson’s comments on the share which is monitored, we found evidence in internal documents of precise target market shares being the goal.²⁰¹

to us that coordination was taking place prior to 2007 as well. However, we have not sought to identify the precise date coordination started.

¹⁹⁷ In our view, the existence of cross-sales would further enhance the role of price announcement letters in facilitating price parallelism. For example, Hanson told us that, in its capacity as a very large customer of Lafarge, Lafarge informed Hanson of the precise cement price increase Lafarge was planning to implement in mid-2008 as a customer courtesy, in the days before Lafarge had issued its price announcement letters. Hanson told us that, although Hanson had already taken its own decision to increase its prices across all business lines, this new information from Lafarge regarding the Lafarge increase effectively narrowed and constrained the price increase range that Hanson was considering (and ultimately implemented) for its own price announcement in mid-2008, since Hanson did not wish to lose business by being perceived as being more expensive than the market leader.

¹⁹⁸ Cemex told us that the price parallelism we observed was consistent with competition between GB producers because they faced similar costs. Lafarge Tarmac made a similar comment in its [response to provisional findings](#) (paragraph 105): it told us that the correlation of average price movements was most likely to be driven by the overall correlation in variable cost changes, and that price parallelism was impossible in a market where hundreds of different prices were charged. We agreed that the observation of price parallelism, by itself, was not direct evidence of coordination, and could be consistent with competition between GB producers facing similar costs. However, in a market with high levels of price dispersion and where prices are individually negotiated, we thought that the price parallelism observed was evidence that price announcement letters served some purpose in signalling future price intentions resulting in alignment in changes in average prices of the GB cement producers over time. Cemex further argued in its [response to provisional findings](#) (paragraph 7.53) that our own analysis of price parallelism showed that one GB producer’s and one importer’s prices were not parallel with the prices of other GB producers and importers. Cemex told us that the presence of such mavericks substantially decreased the sustainability of coordination. However, we found parallelism in the prices of all GB producers (although on some measures it is correct that prices of one of the importers were not highly correlated with the GB producers). We consider the impact of the competitive fringe on the external sustainability of coordination in paragraphs 8.275–8.282.

¹⁹⁹ In [response to provisional findings](#) (paragraph 6.5.12), Hanson argued that, after adjustments for inflation were made, industry average annual prices were falling across as many as three of the five years of the reference period. Hanson said that therefore, in such circumstances, any stated concerns regarding the impact or adverse effects of price letters were of limited value. However, we noted that there was strong internal documentary evidence supporting our interpretation of the role played by price announcement letters in facilitating coordination. Hanson itself explained to us how price announcements by other Majors were taken into account by it in setting the level of its own price announcements (see the second footnote to paragraph 8.208). Therefore we consider that prices would have fallen further in absence of price announcements.

²⁰⁰ [Hanson response to provisional findings](#), paragraph 8.26.

²⁰¹ See, for instance, paragraph 8.135 above.

- 8.211 Lafarge Tarmac told us²⁰² that price announcement letters were unlikely to dampen price competition for the following reasons:
- (a) They did not provide reliable information on direction of price movement.
 - (b) They did not provide reliable information on how any individual customer's price would change.
 - (c) They had no commitment power (actual prices and actual changes were not observed so there was no ability to monitor whether prices in reality increased by the amount announced).
 - (d) They could not soften customer resistance to price increases as customers generally had a good awareness of cost increases that Lafarge Tarmac faced (indeed the CC's own analysis showed that Lafarge's prices generally moved in line with Lafarge's variable costs).
- 8.212 Cemex also told us in its response to our provisional findings²⁰³ that we had not provided any credible recent evidence that price announcements facilitated coordination, making similar points to those set out in the previous paragraph, and also noting that recent evidence indicated no pattern of price announcements and that Cemex had never sent out advance copies of its price announcements.²⁰⁴
- 8.213 However, as set out in paragraph 7.199, we attributed more weight to the patterns of price announcements which we observed in the earlier years of the period we analysed, prior to the industry being under regulatory scrutiny. Further, we noted that there was clear internal documentary evidence (see, for example, paragraphs 8.69) showing that GB producers regarded these price announcements to be sufficiently important to circulate them from their RMX division to their cement division, triggering urgent internal commercial discussions about their own price increases. Paragraph 8.91 sets out evidence of 'restraint' being shown during price increase periods, or being identified as being needed. As set out in paragraph 8.89, we considered that price announcements were consistent with signalling between Lafarge, Cemex and Hanson of the general magnitude of the desired price increase. Paragraph 7.211 sets out our conclusions, based on the evidence, that price increase announcements from different firms all becoming effective at the same time facilitates price increases. Paragraph 8.186 sets out evidence from internal strategy documents explaining how price announcements are used—this evidence is consistent with price announcements softening resistance to price increases.
- *Monitoring of the terms of coordination*
- 8.214 We examined whether there was sufficient transparency to allow producers to monitor terms of coordination based on shares of sales.
- 8.215 As set out in paragraph 7.128, the MPA publishes monthly data aggregated across GB cement producers on GB cement production and GB cement producers' sales of cement, with a one-month lag. Combined with data on its own sales and production, this information enables each GB producer to calculate its own monthly share of GB production and its own monthly share of sales by GB producers.²⁰⁵ However, this

²⁰² [Lafarge Tarmac response to provisional findings](#), paragraph 104.

²⁰³ [Cemex response to provisional findings](#), paragraphs 7.42–7.49.

²⁰⁴ *ibid*, paragraph 7.54.

²⁰⁵ Cemex said that we had not presented evidence that cement suppliers systematically used MPA data combined with monthly win/loss data to understand to which supplier they had lost market share and that therefore that we had not shown how

information does not enable the calculation of market shares including imports, and does not show to which other supplier(s) share has been lost in the event of a loss. Therefore in order to monitor deviations from the coordinated outcome by others, GB producers would need to complement information on monthly share with other information. Monitoring of a producer's own wins and losses of customers, and of the supplier(s) to which these customers switched, would enable a distinction to be made between a change in share of sales due to deviation by another specific cement producer, a change due to switching to the competitive fringe (ie suppliers outside the coordinating group of firms), and a change due to a customer simply requiring more or less cement overall in a given month (which would not represent a deviation from the coordinated outcome because another cement producer would not be responsible for the change in share²⁰⁶). In addition, a degree of monitoring of prices may also help cement suppliers to detect whether a deviation has occurred.²⁰⁷

- 8.216 Each GB producer also has some knowledge of demand conditions in downstream RMX markets via its own RMX business (for example, the identity of the RMX producers which have won or lost large projects). This also increases the amount of information available to GB producers, and helps them distinguish between reductions in share of sales due to a deviation and reductions in volumes due to a particular cement producer's customers not having performed well in a particular period.²⁰⁸
- 8.217 The characteristics of both bulk and bagged cement customers and the way in which they purchase cement (see paragraphs 7.27 to 7.29) facilitate monitoring of wins and losses of customers:
- (a) Customers tend to purchase cement from fixed locations and the customer base for cement is stable over time, which means that it will be easy to detect, when a job site ceases purchasing, that this is due to switching (rather than, for instance, going out of business, or because the customer happens not to need cement for a particular time period).
 - (b) Customers purchase cement very regularly, with deliveries in the case of bulk cement usually occurring at least once a month but possibly more often, which means that switching is likely to be detected rapidly (no long lead time before finding out that a customer has switched).
 - (c) For bulk cement, customers tend to single-source for a given job site, which also makes it easier to detect switching.
 - (d) Although GB cement producers have a large number of customers at any given time, the top 50 to 100 customers of each producer account for the large majority of its bulk cement sales, and the customer base for bagged cement is also fairly

a producer could punish deviations on a regular basis. However, our review of internal documentary evidence highlighted many examples of suppliers monitoring market shares and wins and losses.

²⁰⁶ Such changes in share (as a result of customers simply requiring more or less cement in a given time period) could be expected to occur randomly across the entire customer base, and to even out across cement suppliers over time.

²⁰⁷ As noted previously, there is evidence that some information on prices charged by competitors can be gathered from customers and potential customers as part of the sales negotiation process. Through these discussions, cement producers are able to obtain an indication of the range of prices charged by competitors, if not the exact levels. Therefore, such information contributes to a cement producer's overall understanding of the cement market and, when used alongside information on market shares, would help a producer detect whether (and which) rivals may be behaving particularly aggressively on price.

²⁰⁸ In its [response to provisional findings](#) (paragraph 10.9.4), Hanson told us that it accepted that a presence in RMX sometimes gave cement producers a degree of information about downstream supply and demand conditions. However, it noted that the incremental value of this information was small because cement price quotes from another Major might bear no relationship with deals those Majors were doing with other RMX players; and because RMX markets were highly localized, so any observations in a particular local market might not be representative of performance in the wider market. We set out in paragraph 8.213 why cross-sales provide information on pricing. With respect to the comment from Hanson that observations in a particular local market may not be representative of performance in the wider market, we note that Majors have networks of RMX plants, so that they are able to use their RMX networks to gain an insight into a number of different local markets.

concentrated. Therefore the number of customers that need to be monitored is likely to be manageable in practice.

(e) It will often be possible to find out, when a customer has switched, which supplier it has switched to, through contacts with customers (customers will often tell their existing supplier which other supplier they are switching to), as well as through observations as to which supplier is subsequently seen to be making deliveries to the customer.²⁰⁹ The vertical integration of the GB producers into downstream markets for cement, especially RMX, gives them additional local information about these markets.

8.218 Cemex told us²¹⁰ in response to our provisional findings that the CC analysis of customer switching showed that there was significant churn in the GB producers' independent customer base with wins and losses on an annual basis representing [redacted] and [redacted] per cent respectively of the average number of customers supplied per year. Cemex argued that this did not support the assertion that there was a stable customer base that was easy to monitor. Cemex also submitted²¹¹ that win/loss data was too unreliable to be used to calculate others' market shares, since customers had an incentive to mislead suppliers and since our own analysis showed that GB producers' own records of wins and losses were accurate only just over half the time. Our analysis of the ability to monitor customer switching and customer-supplier relationships was based on the following characteristics: the relatively small number of customers to monitor due to the concentration and location of the customer base, the fact that customers tend to be repeat customers purchasing cement regularly and directly observable customer-supplier relationships (ie there is no need to rely on what customers say). Taken together, these factors make it easy to detect a switch, and to identify customer-supplier relationships. Internal documentary evidence shows that the GB producers have good awareness of winning and losing suppliers, and of the volumes involved. The fact that a number of customers do in fact switch every year alters neither these factors nor the ability of cement producers to monitor such switching.

8.219 A number of internal documents indicate a close monitoring of GB producers' own share (on a month-by-month basis and sometimes at a regional level). They also indicate that the preservation of share appears to be a metric of business performance (see paragraphs 8.78 to 8.85 and 8.120 to 8.151). In a number of documents we also see references to maintaining market stability or observe a focus on balancing relative positions between the rival cement producers. The documents show that customers and volumes won/lost are monitored, and that this information is used to adjust estimates of share on an ongoing basis. The main metric that is monitored in the strategy documents appears to be the overall share of GB cement sales—including both bulk and bagged cement sales, as well as internal sales.

8.220 Internal documents supported our views on the monitoring of shares and wins and losses of customers by the GB producers. For example:

(a) our analysis of the 2009 internalization event (see paragraphs 7.230 to 7.238), which suggested that Hanson and Lafarge viewed their own share of sales for all

²⁰⁹ Cemex told us that customer behaviour was not simple to predict because of the degree of customer switching that took place, and that this factor would make coordination difficult. We disagreed that the ability to coordinate depended on the ability to predict customer behaviour: rather, the ability to coordinate depends (among other things) on the ability of GB cement producers to observe customer behaviour through monitoring of wins and losses and of market shares.

²¹⁰ [Cemex response to provisional findings](#), paragraph 6.8.

²¹¹ *ibid*, paragraphs 6.21–6.24 and 7.12–7.15. In paragraph 7.18 of its response, Cemex also set out a number of points which it argued showed that customer behaviour did not facilitate monitoring, [redacted]. In response to these arguments, we noted that (a) [redacted].

cement as their key metric. The evidence also showed that GGBS purchases could also be taken into account (eg Lafarge ceasing to purchase GGBS from Hanson following Hanson's internalization of significant cement volumes it previously purchased from Lafarge); and

(b) an internal email from Hanson which also suggested that overall share of sales was important: An email from [Hanson Senior Cement Executive] to [Hanson Senior Cement Executive] dated 22 August 2010 (titled 'Monday meeting at 12.00pm'); CC document 3, shows a series of complex interlinking questions around 'Lafarge options/swaps' and 'Cemex threats and options', among other issues. One bullet point states: 'If we decide to go for packed share from both Cemex and Lafarge we would have to consider giving them concrete business.' This suggests that Hanson might have to 'compensate' Cemex and Lafarge in the RMX market if it takes packed cement from them. A later email dated 6 September 2010 from [Hanson Senior Cement Executive] titled 'Notes from bulk strategy meeting' states that: 'We are going to take packed share from Lafarge and not relinquish any bulk share to them' and 'We are going to take 70,000 tonnes of packed business from Cemex and give them 70,000 tonnes of Hanson plants'.

- *Evidence for coordination on shares of sales from market outcomes*

8.221 We also examined whether some of the market outcomes we observed were consistent with coordination based on shares of sales. If there is coordination on shares of sales, we would expect to observe shares of sales which are relatively stable over time, at least within the coordinating group of firms. We analysed trends in shares of sales in paragraph 7.15. This analysis showed that coordination around national shares appeared to be more in evidence than coordination around regional shares, since there is more variability in regional shares than in national shares. At a national level, we found that, although Hanson, Cemex and Lafarge had each seen a reduction in their share between 2007 and 2011, this was mainly to the benefit of Tarmac and importers. This evidence on trends in shares of sales is compatible with a degree of coordination on shares of sales in the GB cement markets, given what we found to be the different roles of the firms in these markets (see paragraphs 8.322 to 8.348).

8.222 We would also expect, if there were coordination on shares of sales, that shares of sales would not be particularly volatile, ie shares of sales would not show large movements from one period to the next. We found a lack of volatility in shares of sales in the GB cement markets (see paragraph 7.8), although we found that there was more volatility in monthly shares of sales than in annual shares, which suggested to us the existence of a mechanism by which short-term perturbations in shares were rebalanced.

8.223 Cemex submitted that the monthly volatility of market shares was consistent with GB producers winning business from each other in an attempt to maintain volumes during a demand slump.²¹² Hanson submitted that monthly shares showed high volatility, and that the CC's focus on annual market shares understated the amount of volatility in shares.²¹³ Whilst there is evidence of changes in monthly market shares, we found that, over the time frame of a year, wins and losses tended to even out and market shares remained relatively stable over the medium term. The fact that, despite monthly variations, market shares tended to return to a stable level over the

²¹² [Cemex response to provisional findings](#) paragraph 4.13.

²¹³ [Hanson response to provisional findings](#), paragraph 6.5.25.

medium term, was suggestive of a mechanism by which short-term perturbations in shares were rebalanced. We also explain in paragraph 8.228 that some degree of customer switching and monthly changes in market shares are not incompatible with coordination.

- 8.224 In addition, we would expect ‘negative autocorrelation’ in changes in shares on a monthly basis if coordination were taking place on shares of sales. In other words, if the share of Producer A increased relative to other producers in one month, we would expect that the share of Producer A would reduce in the following month (assuming that one month is a sufficient time for producers to react to any changes in their market share). As set out in paragraphs 7.184 to 7.187, we undertook an analysis of month-by-month changes in share of sales and found negative correlation coefficients in own share changes for all GB cement producers,²¹⁴ which was consistent with coordination on shares of sales.
- 8.225 Hanson told us, in response to our provisional findings, that changes in own-market shares were, by their very definition, ‘negatively correlated’, where market shares were observed with an error. Hanson’s argument was that, if a reporting error were made in calculations of market shares in one month (for instance, a sale being incorrectly reported within the month), because this error would be corrected in the following month, this would lead to market shares being negatively auto-correlated over time. Hanson submitted that it was therefore mathematically inevitable that the CC would find changes in market share to be ‘negatively correlated’ if market shares were observed with error. Hanson illustrated its reasoning with the following example: if a cement producer had an average market share of 25 per cent, but this share fluctuated randomly between 24 and 26 per cent, then we would observe negative autocorrelation in month-by-month market shares. We disagreed with Hanson that market shares being observed with an error would result in negative autocorrelation. First of all, even if errors in reporting of sales occurred over time, these would be likely to be small and unlikely to result in changes in market shares. Moreover, market shares would only revert to their original level if there were some pre-determined stable market shares to return to. Our argument is precisely that, in a competitive market, we would not expect market shares to make small fluctuations around a ‘natural equilibrium’; rather, we would expect that, if a cement producer gains share in one month, this reflects a competitive advantage and we would expect such improvements to continue in the following months. In other words, it is the fact that market shares tend to gravitate towards a stable level which is suggestive of coordination.
- 8.226 Customer switching between cement producers has the potential to undermine the effectiveness of coordination on shares of sales, as high levels of switching will generate instability in shares, making it more difficult for firms to reach a coordinated equilibrium. To the extent that switching events are associated with suppliers undercutting each other’s prices in order to win back customers, then this could to some extent offset the adverse effects of coordination, ie stable shares may be achieved but prices may be eroded if there are high levels of switching.
- 8.227 Paragraphs 7.176 to 7.183 set out our analysis of cement customer switching. We found some periods of relatively high switching (late 2008 and 2009), and periods of relatively low switching (2010 and 2011)—see also our discussion of time variation in our evidence base in paragraphs 8.294 to 8.303.

²¹⁴ Coefficients were statistically significant for two of the four GB producers [§] when looking at changes in shares in the following month, and statistically significant for the Top 3 GB cement producers ([§]) when looking at changes in shares in the following two months.

- 8.228 A degree of customer switching between GB producers is compatible with coordination. If there is some competition between GB suppliers (for example, for the most profitable customers²¹⁵), such competition will not undermine any overall coordination on share of sales—and will be constrained in magnitude—if there is a mechanism to re-establish stable market shares (which we consider to be the case—see paragraph 8.289). There may be some competition between GB producers within bounds which are determined by stability of market shares, and such competition is compatible with overall coordination on market shares. We consider that such coordination may be described as ‘imperfect coordination,’²¹⁶ in that it co-exists with some competition in the market, its success varies over time but it nevertheless results in less competition than would take place in a well-functioning market. Further, such competition as exists within the GB cement markets does not result in cheaper prices for all customers, due to the ability of cement suppliers to price discriminate (see paragraph 8.7). We noted that evidence on market outcomes (see paragraphs 8.3 to 8.7) was consistent with coordination in the GB cement markets taking place throughout the period we analysed (although it may have been more and less successful at different times—see paragraphs 8.294 to 8.303).
- 8.229 Cemex told us in its response to our provisional findings²¹⁷ that we had not identified any clearly defined bounds within which each member of the alleged coordinating group is able to compete, resulting in each GB producer being unable to distinguish deviation from permissible competition within bounds. It further argued that, if there were coordination in the market, one would expect that the most profitable customers in the market would be precisely the customers in respect of which the coordinating group would seek to reduce competition.²¹⁸
- 8.230 We did not agree that the bounds within which competition can take place needed to be clearly defined in the sense of which particular customers could be targeted, because we did not think that the bounds of competition related to particular customers. Rather, we thought that the bounds would be defined in terms of market shares: namely, if a GB producer gained some market share as a result of having gained new customers, as long as there was a mechanism for market shares to be re-established in the following period, such competition would not undermine the coordination. Similarly, there would be no need for GB producers to be able to distinguish between modest deviations from the coordinated outcome and competition within bounds. We did not think that competition within bounds would be ‘permissible’, rather that it would be of such an extent (in terms of net wins and losses and prices offered) as to not undermine the overall coordination. As long as GB producers reacted to such competition within bounds by taking action to rebalance market shares, this would allow such competition within bounds to occur without undermining the overall coordination. As set out in paragraphs 8.254 to 8.264, we found that there was evidence of a mechanism to rebalance market shares. In relation to the comment from Cemex that most profitable customers would be precisely the customers in respect of which the coordinating group would seek to reduce competition, we noted that the most profitable customers to serve would vary between GB producers due (for example) to their different proximities to different GB producers’ cement plants.

²¹⁵ There is some internal documentary evidence of the targeting of ‘quality’ of share, ie targeting more profitable customers within existing shares. See Appendix 8.3, paragraphs 10, 152, 398 & 399.

²¹⁶ As set out in paragraph 4.28(a), the Guidelines state in [paragraph 239](#) that ‘Coordination does not have to be “perfect” at all times to affect a market. For example, it may be intermittent; ie periods of coordination may be interspersed with periods of greater competition when not all competitors see it in their interest to cooperate.’

²¹⁷ [Cemex response to provisional findings](#), paragraphs 2.22, 7.11, 8.2, 8.10 & 8.19.

²¹⁸ *ibid*, paragraph 8.3.

- 8.231 Lafarge Tarmac told us in its response to our provisional findings that, if there was competition for a certain group of customers because they were currently the most profitable, such customers would become less profitable to serve (due to competition) while other customers for which there was less competition became more profitable.²¹⁹ We noted that the fact that there may be some competition for certain customers did not necessarily imply that such competition would result in these customers being offered competitive prices. Rather, we thought that cement producers may attempt to increase the quality of their share over time (eg by gaining customers most profitable for them to serve because of their location near the plant, and for which they can derive higher margin), but that this would not necessarily result in head-to-head competition because the customers which are more profitable to serve will vary depending on location of the plants of each producer.
- 8.232 Hanson strongly disputed in its response to our provisional findings²²⁰ that competition was constrained in magnitude, citing internal documentary evidence of unrestrained competition, market share volatility and what Hanson argued was the need for any bounds of competition (which it said we had not defined) to change over time to reflect market developments—generating uncertainty and making coordination impossible to sustain. Cemex made a related point in its response to our provisional findings,²²¹ arguing that if it was our case that it was not profitable to deviate from a coordinated outcome, we had to explain why there was so much evidence of switching and competition taking place.
- 8.233 We acknowledge internal documentary evidence of competition taking place—see paragraph 8.17—but we consider that this may be distinguished from deviation, which would be a systematic attempt to increase market share materially above the coordinated level, for example by reducing prices and/or supplying greater volumes into the market. We respond to parties’ comments on market share volatility in paragraphs 8.33 to 8.41. As noted above, we did not think that competition within bounds would be ‘permissible’ or would require precisely defined market share boundaries. Rather, such competition would only need to be of such an extent (in terms of net wins and losses and prices offered) as to not undermine the overall coordination.
- 8.234 Cemex told us that the switching analysis indicated relatively high levels of churn which made coordination around market shares difficult to sustain. Cemex also told us that that most customers obtained extremely competitive prices from existing suppliers and suppliers routinely had to defend volumes by lowering prices—therefore customers generally had little incentive to switch.²²² Hanson made a similar argument: it told us that there was strong empirical evidence of GB Majors and importers either winning customers from Hanson or forcing Hanson to lower its prices, and referred us to the results of our switching analysis, the examples of threats to switch it had provided²²³ as well as the 2012 internal documentary evidence.
- 8.235 We noted that the switching analysis did not show consistently high customer switching: rather, there were two years characterized by relatively high amounts of cus-

²¹⁹ [Lafarge Tarmac response to provisional findings](#), paragraph 90.

²²⁰ [Hanson response to provisional findings](#), paragraphs 9.24–9.28.

²²¹ [Cemex response to provisional findings](#), paragraphs 8.6 & 8.7.

²²² Cemex further argued in its [response to provisional findings](#) (paragraph 7.36) that in any event, high levels of switching, or threats to switch, were likely to result in lower prices across the market, given that customers were cost conscious and had adequate information (for example, they obtained quotes from importers and there was a high level of multi-sourcing). We disagreed with this argument for the same reasons that we disagreed with Cemex’s arguments about its inability selectively to reduce prices to customers at threat from importers—see paragraph 7.117.

²²³ See Appendices 7.5 & 7.9.

customer switching (2008 and 2009), and in other years customer switching was relatively low: wins of independent customers accounted for less than 5 per cent of the largest three cement producers' sales in every year except 2009 (see Appendix 7.9).²²⁴ We also noted that, despite some years exhibiting relatively high switching, year-on-year market shares had tended to remain stable: there was no evidence, for instance, that one cement supplier within the coordinating group was consistently offering more competitive terms to customers over time, resulting in customers switching to this more efficient provider and market shares of this provider increasing over time. Rather, year-on-year market shares tended to remain stable, which suggested to us that coordination around market shares was possible despite a degree of switching (see also paragraph 8.228). In relation to threats to switch, whilst there were some examples provided by the cement producers of having to reduce prices (or increase prices less than forecasted) in response to threats to switch, we noted that our analysis of average cement prices to all customers showed that cement prices had increased in real terms between 2007 and 2009, to then reduce in real terms between 2009 and 2012. This suggested that, after 2009, customers who had switched or threatened to switch may have been able to obtain price reductions. However, we also noted that the evidence on market outcomes (see paragraphs 8.3 to 8.7) suggested that, overall and on average, switching and threats to switch had not been sufficient to erode the margins and profitability of the GB cement producers.

8.236 Lafarge Tarmac told us in response to our provisional findings that prices fell in real terms in 2010 and in 2011, during a period where the CC analysis found relatively low levels of switching. It told us that this showed that credible threats to switch were successful in delivering lower prices.²²⁵ We agreed that threats to switch could result in lower prices, but did not agree that threats to switch or indeed switching were the only explanation for any reductions in prices. Overall, we noted that, despite switching and threats to switch, this had not resulted in an erosion of the margins and profitability of the GB cement producers during this time.

- *Conclusions on the ability to reach an understanding and monitor the terms of coordination*

8.237 In view of the high degree of transparency of shares of sales, wins and losses of customers and customer–supplier relationships (and, to an extent, pricing behaviour at a general level) in the GB cement markets, the evidence of firms' monitoring of these parameters and the evidence on market outcomes that were generally consistent with coordination on shares of sales (although varying over time), we concluded that it was likely that firms in the GB cement markets had the ability to reach an understanding and monitor coordination on the basis of shares of sales.

Internal stability

8.238 We now consider whether there are mechanisms through which the internal stability of coordination can be achieved in the cement market, such that all firms that are part of the coordinating group find it in their individual interests to adhere to the coordin-

²²⁴ We calculated the amount of switching as a proportion of total cement sales of each producer, rather than as a proportion of specific subcategories of sales (eg, sales to independents). In terms of the impact of switching, it is churn as a proportion of total sales that affects profitability and that we therefore considered was likely to be taken into account in the GB cement producers' strategies. Lafarge Tarmac told us that our approach to analysing switching resulted in an underestimate of the extent of switching, and that we should compute switching as a proportion of independent sales rather than total sales ([Lafarge Tarmac response to provisional findings](#), paragraph 40). However, our purpose was not to estimate the propensity to switch of independent customers, but rather to understand the total amount of churn in GB cement producers' sales, and therefore we thought that switching as a proportion of total sales was the appropriate measure to analyse.

²²⁵ [Lafarge Tarmac response to provisional findings](#), paragraphs 39 & 40.

ated outcome. In a coordinated market, it is often in a firm's short-term interest to deviate from the terms of coordination in order to increase profits unilaterally. However, if such deviation results in lower profits in the future because of the reaction of the other members of the coordinating group, a firm may be deterred from deviating.

8.239 The Guidelines state²²⁶ that the following market characteristics can help increase the internal sustainability of coordination: a concentrated market, market transparency (which facilitates detection of deviation and increases the speed with which deterrence can take place), and other factors (such as the existence of excess capacity) which also increase the speed with which deterrence can take place.

8.240 The GB cement markets are concentrated (see paragraph 7.16) and there is considerable transparency in these markets (see paragraph 8.206). We therefore focused on whether effective deterrents to deviation existed, by first examining how deviations in cement were likely to take place and how profitable these were likely to be, and then looking at the effectiveness of different deterrent strategies.

- *Deviations in cement*

8.241 The incentive to deviate from coordinated shares of sales by increasing sales above the coordinated levels will depend on how profitable such a strategy would be. This depends on (a) the amount and profitability of additional sales or share a deviator will be able to capture; (b) the speed at which such deviation will be detected by competitors; and (c) if and when a deviation has been detected, the consequences for profits of any subsequent punishment period.

8.242 Prices for cement are negotiated individually by customers (see paragraph 7.170) and there are no 'posted prices' for cement which would be easily accessible to customers. This affects the way in which deviation in cement can take place and the feasibility of any large-scale deviation. Deviation from coordinated outcomes could take place by:

(a) 'targeted' deviation: a firm wishing to increase volumes above coordinated levels may need to approach a number of customers of other producers with low price offers in order to make these customers switch;

(b) deviation by announcing price increases substantially lower than competitors²²⁷ (including, for instance, announcing a price reduction or no price increase, or announcing a delayed price increase²²⁸); and/or

(c) deviation through a firm's downstream RMX business. This would entail the lowering of RMX prices to final consumers in order to increase a firm's share of RMX business and thereby indirectly increasing that firm's cement sales at the expense of other firms' cement sales. We did not consider that this would be as effective or as immediate as targeted deviation, for the reasons set out in Appendix 8.5.

²²⁶ The Guidelines, [paragraph 254](#).

²²⁷ Our data shows that, in relation to the price announcements regarding proposed price increases to take effect on 1 January 2012, one GB producer announced a lower price increase than the others.

²²⁸ Our data shows that there was a delay to some of the GB producers' price increases on one occasion: when Tarmac and Hanson announced in late October 2009 price increases to become effective from 1 January 2010, Cemex and Lafarge subsequently announced (in late October and early December 2009 respectively) price increases to become effective from 1 March 2010.

- 8.243 We considered that targeted deviation from the coordinated outcome was more likely than deviation via the announcement of lower price increases.²²⁹ The announcement of lower price increases would be likely to be highly transparent to competitors, who become aware of the contents of price announcement letters quickly (either because they receive these letters directly as customers of each other or because customers inform suppliers about the price announcement letters they have received from other potential suppliers). Therefore the speed at which such deviation would be detected would be likely to mean that any profits from such deviation would be short-lived at best, as other firms would be quick to react by lowering their prices to existing customers to prevent them from switching. This would result in a no-win outcome for all: lower prices and no increase in volumes for the attempted deviator.
- 8.244 Targeted deviation could be relatively small-scale, though it could be large-scale if a very large cement customer were approached and won from another cement producer. In this respect, the more concentrated the customer base, the larger the incentives to deviate.²³⁰
- (a) If demand for cement is fragmented, in order to deviate, a cement producer may need to approach a relatively large number of customers to get sufficient profits from deviation. This makes it more costly to deviate, and also increases the risk that deviation will be detected quickly as some of the customers may inform their existing supplier that they have been approached by a competitor.
- (b) If, on the other hand, there are some very large customers, this will make demand for cement lumpier. Inducing one of these large customers to switch may be sufficient to generate high one-off gains from deviation.
- 8.245 We analysed the concentration in the customer base for bulk cement (see paragraph 7.27 and Appendix 7.9). We found that, if the Majors' own RMX businesses were included, the customer base was highly concentrated: the Majors account between them for around 60 per cent of all bulk cement purchases. However, if the Majors are excluded, the largest independent customers do not individually account for a large proportion of purchases of cement ([x%] per cent for the largest, [x%]).
- 8.246 The largest customers would be likely to have many different sites purchasing cement. Cement-purchasing arrangements for those sites would depend on geographical considerations. Therefore, whilst such large customers might change suppliers for some of their sites, we considered it unlikely that a deviator would be able to capture all of the demand of a large multi-site operator as it was unlikely that the deviator's cement plants and depots would be well placed to serve all of a large customer's sites at a lower price than all other rival suppliers.
- 8.247 The customer base for bagged cement shows a higher degree of concentration than the customer base for bulk cement (see paragraph 7.29 and Appendix 7.9) and bagged cement customers tend to have longer-term contracts, typically in excess of one year.
- 8.248 We concluded that, because deviations from the coordinated outcome were likely to take place by targeting individual customers of competitors, and because, apart from the Majors themselves, most cement customers did not account for a large

²²⁹ Deviation by announcing lower price increases would be different in magnitude from the variations we found in announced price increases. Variations in announced price increases relate to the accommodation of the first mover's announced increase, as set out in paragraph 7.200, and involve subsequent attempts to increase prices at similar albeit not identical levels.

²³⁰ Even if the customer base is not very fragmented, another factor which could increase incentives to deviate is the existence of long-term exclusive contracts with suppliers. If firms bid at a given time to supply a large amount of demand over subsequent years, gains from one-off deviations may be increased. However, such contracts are a rare occurrence in the cement market.

proportion of purchases of cement, the potential gains from one-off deviations would be relatively limited.²³¹ We also noted that the larger the customers targeted by the deviator (in order to maximize any gains from deviation), the faster any such deviation was likely to be detected by competitors, as GB cement producers were likely to monitor closely their largest customers (see paragraph 8.217).

- *Punishment/deterrent strategies*

- 8.249 In order for coordination to be sustainable, cement producers must lack an incentive to deviate from the coordinated outcome, because of the expected reaction from others to such deviation. There must therefore be a mechanism by which the profits of the deviator are reduced once a deviation has been detected. There is a relationship between the type and strength of punishment required and the type and strength of deviation strategies: the higher the potential profits from deviation, the larger the cost to the deviator needs to be in a punishment period to provide sufficient disincentive to prevent further deviations from occurring.
- 8.250 A typical punishment strategy which is considered in the economic literature is resorting to price wars. For example, in this case, this could be through GB cement producers cutting prices to their competitive levels, in the event of large-scale deviations from coordination. Our analysis of the data on pricing between 2007 and 2012 did not reveal any evidence of price wars taking place.²³² On the other hand, our analysis of changes in monthly and annual market shares also suggested that there had been no large-scale deviations from a coordinated outcome during our period of analysis: changes in monthly market shares had been relatively limited. This suggested to us that there may not have been a need for the GB cement producers to engage in full-scale retaliation during the period we analysed (for instance, through a price war) because there were no large-scale deviations during this period, which may also be linked to the existence of a very effective mechanism for rebalancing market shares in the event of movements away from the coordinated outcome (see paragraphs 8.254 to 8.265). The largest changes in monthly market shares during the period we examined occurred in early 2009, at the time of the large-scale internalization of cement volumes by Hanson. Following this large shock on the GB cement markets, there was some evidence of prices reducing in the second half of 2009 compared with their peaks in early 2009 (see Appendix 7.12), to then stabilize from 2010 onwards, which could be characterized as a limited 'price war' (see paragraph 7.235(f)). However, despite these reductions in prices, variable profit margins remained stable, suggesting that reductions in prices were driven by cost reductions rather than an intensification of competitive behaviour.
- 8.251 There was evidence from internal documents that one GB producer was conscious of the risk and implications of a price war (see Appendix 8.3, paragraphs 226 and 263).
- 8.252 Overall, we found that the evidence showed that an effective punishment strategy existed (ie a widespread return to competitive prices), but that it had not been required to be deployed during the period we analysed.

²³¹ This does not necessarily mean that targeting of individual customers of competitors is rare. We saw some evidence of a degree of switching of customers between GB cement producers, and such switching was higher at some times than at others. As set out in paragraph 8.228, such switching is compatible with coordination so long as there is an effective mechanism to rebalance market shares when switching has occurred.

²³² A price war would typically manifest itself through large reductions in average prices in one period, followed by prices returning back to their original levels in subsequent periods. Whilst there was evidence of some shocks in the GB cement markets over the period we analysed (see, for example, paragraph 8.296(a) and (d)), these did not have the characteristics of a full-scale price war.

8.253 However, we observed some volatility in monthly market shares. As we set out in paragraph 8.228, a degree of customer switching, which would result in changes in monthly market shares, is not incompatible with coordination between GB suppliers. However, if such switching does take place and results in changes in monthly market shares, there must be a mechanism in place to re-establish stable market shares in order for coordination to be successful. We therefore examined further whether there may be a mechanism in place by which relatively small changes in market shares were rebalanced, and whether there was evidence of market shares being rebalanced. Our review of the internal documents suggested to us that cement producers often resorted to ‘tit-for-tat’ strategies (see paragraphs 8.96 to 8.100 and 8.152 to 8.183), and therefore in the following paragraphs we examine further the evidence on tit-for-tat strategies and how these can be used to stabilize market shares.

- *Tit-for-tat strategies*

8.254 A tit-for-tat strategy can be characterized as follows: If Firm A increases its market share by gaining X tonnes from Firm B, Firm B reacts in the following period by approaching some of Firm A’s customers so as to gain back X tonnes from Firm A.

8.255 Tit-for-tat strategies may not be a fully effective deterrent in the event of large-scale deviations; in such cases a price war may be more effective. However, in the event of relatively small changes in market shares, a tit-for-tat strategy is likely to be sufficient to re-stabilize market shares. The knowledge that others will engage in a tit-for-tat strategy in response to a rival’s market share increasing may also, in some cases, act as a deterrent to GB cement producers gaining new customers in the short term. Indeed, if Firm A increases its share in one period:

(a) In the period where it increases its share, Firm A will get additional profits through increased volumes, though possibly at lower margins than on previous sales (if it has to reduce price in order to attract customers from competitors).

(b) In subsequent periods, Firm A’s total volume of sales will go back to the co-ordinated levels (as a result of tit-for-tat), but margins may be lower if it had to reduce prices in the first place.

8.256 Therefore, if any gain in market share by one firm is matched by a reduction in its market share due to tit-for-tat in the following period, firms will have very limited incentives to seek to attract new customers and increase their market share. They will only have such an incentive if they can, by doing so, attract particularly profitable customers (eg customers located close to their plants from which they may be able to secure higher margins than their competitors). The existence of a tit-for-tat strategy is therefore likely to mitigate any incentives on GB cement producers to compete for customers.

8.257 The internal documentary evidence we reviewed, including internal documents relating to the 2009 internalization event (see paragraphs 7.230 to 7.238), provided direct evidence of Cemex, Hanson and Lafarge reacting to the loss of a customer to one of their number by targeting customers²³³ from the same cement supplier in order to regain share in response (tit-for-tat behaviour). Our review of internal documents also

²³³ We noted that, as a result of bagged cement customers tending to have longer-term contracts than bulk customers (see paragraph 8.247), punishment via targeting of bagged cement customers might not be as immediate as in the case of bulk cement customers. However, we also noted that Lafarge successfully gained bagged cement customers (representing large volumes of cement) from Hanson as part of its response to Hanson’s 2009 internalization.

showed that the expectation of tit-for-tat was sometimes taken into consideration by Cemex, Hanson and Lafarge in their sales decisions.

- 8.258 Lafarge Tarmac told us, in its response to the provisional findings, that market shares were not stable, proving that tit-for-tat was not an effective mechanism, and that, if tit-for-tat were effective, relative market shares would be stable.²³⁴ We agree that there have been some changes in market shares over time; however we also noted that, in the short term, there was some evidence that market shares tended to rebalance on a month-by-month basis (see paragraphs 7.184 to 7.187). We thought that this was consistent with tit-for-tat being used as a mechanism to rebalance shares in the short to medium term, and that this was not inconsistent with longer-term trends in market shares as we explain further in paragraph 8.299.
- 8.259 The Majors told us that the internalization event in 2009 was a ‘one-off’ event, which happened at a time of an unprecedented fall in demand. Hanson told us that it was representative of a common trend across the industry as the industry moved expressly in favour of independence in self-supply, in preference to reliance on each other and any interdependence. We agree that the 2009 internalization event was a one-off situation and could be thought of as a large ‘shock’ to the cement industry. We were therefore interested in analysing how cement suppliers had responded to this shock, and what it revealed about the way in which competition might operate in the cement market.
- 8.260 Hanson told us that the internalization was evidence that there was no coordination between cement producers, since the move to self-supply by Hanson to maximize its profits was a unilateral decision by Hanson and was a long-planned move going back to the time of (and preparation for) the Heidelberg acquisition of Hanson. Hanson told us that the analysis showed that Hanson had failed to foresee the extent of Lafarge’s reaction to this decision. Hanson also told us that its losses to Lafarge at this time were proof that Hanson was not prepared to hold market share at any price although Hanson expected to win an increase of some [3%] per cent of market share from its internalization. We agreed that Hanson’s decision to move to self-supply was a unilateral decision. However, we did not think that this was incompatible with coordination: rather, our review of the evidence suggested that Hanson’s unilateral decision to internalize resulted in a breakdown between Lafarge and Hanson. This appeared to have triggered rebalancing action by Lafarge in terms of recouping market share from Hanson, and unusual amounts of competition in the cement market (shown both by the unusual amount of switching at the time and the fact that prices somewhat reduced after Q1 2009). We considered that the internalization event, whilst unique, revealed information on the behaviours of cement producers and in particular on the way in which Lafarge targeted Hanson’s customers to achieve stability of market shares despite this large shock.
- 8.261 Lafarge Tarmac argued in its response to our provisional findings that any alleged punishment by Lafarge of Hanson in 2009 for deviating by repatriating large cement volumes from Lafarge was not successful since Lafarge’s production share fell substantially from 2001 to 2007, and from 2007 to 2009.²³⁵ However, in relation to the internalization event, the focus of our analysis was on what happened to market shares in 2009. As set out in paragraph 7.232, while in January 2009 there was a large swing downward in Lafarge’s share of the GB market and a large swing upward for Hanson, within a few months these changes were partially compensated. Although Lafarge’s share reduced year-on-year between 2008 and 2009, Hanson’s

²³⁴ Lafarge Tarmac response to provisional findings, paragraphs 115 & 116.

²³⁵ Lafarge Tarmac response to provisional findings, paragraph 120.

share remained relatively stable, suggesting that, to the extent that Lafarge lost share in 2009, this was not to Hanson. The longer-term changes in market shares are addressed in paragraph 8.299.

8.262 Our analysis of the changes in monthly shares over time (see paragraphs 7.184 to 7.187) was consistent with the existence of a mechanism to rebalance market shares in the short term. Indeed, we found statistically significant negative correlation coefficients in own share of sales changes for the three largest GB cement producers (the Top 3) from one period to the next when looking at the correlation between changes in market share in one month and changes in market shares in the following two months.²³⁶ This suggested that, if the share of one of these GB producers reduced in one month, it would increase by a similar amount in the following two months. This was consistent with the existence of a mechanism to rebalance market shares through matching of wins and losses. As set out in paragraph 7.179, our analysis of the correlation in monthly wins and losses of cement suppliers found some positive and statistically significant correlations of wins and losses among the Top 3 suppliers,²³⁷ which would be consistent with tit-for-tat taking place, although the results were not strong (some coefficients were not statistically significantly positive) and there were some caveats to this analysis which limited our ability to interpret the results, among which was the fact that the analysis did not take into account sales of bagged cement.^{238, 239}

8.263 Hanson told us that the observation of negatively-correlated changes in monthly market shares could not be interpreted as evidence of a tit-for-tat strategy as a matter of economic theory. It argued that, under a coordinated effects theory of harm, the aim of tit-for-tat strategies was to provide a threat to prevent deviations, which would only be used when perceived coordination had broken down. Hanson argued that, as a matter of theory, if tit-for-tat behaviour were observed on a continuous basis (as indicated by negatively correlated changes in monthly market shares), this showed that the perceived coordination was always breaking down. Hanson told us that the approaches in practice, for example, by Hanson and by Cemex to their mutual customers, were so constant and common across the whole of the review period, that such actions could not properly be classified as intermittent tit-for-tat

²³⁶ We also found statistically significant negative correlation coefficients for two of the GB producers ([X]) when looking at changes in market shares in one month and changes in market share in the following month; for [X] and [X], the coefficients were negative but not statistically significant.

²³⁷ Cemex noted in its [response to provisional findings](#) (paragraph 8.22) that the MPA published data on monthly GB production and sales with a one-month lag, such that real-time monitoring of market shares was not possible. Cemex argued that it was therefore not clear that analysing contemporaneous correlation in switching between the Top 3 producers was appropriate. However, we analysed both contemporaneous correlations in wins and losses and correlations with a one-month lag. Also, we noted that customers get frequent deliveries of cement (the vast majority of customers have monthly or more frequent deliveries, as set out in Appendix 7.9), and would be likely to cancel deliveries from one supplier as soon as they had switched to another supplier. Given the transparency of customer-supplier relationships, it would therefore not always be necessary to wait to receive MPA data in order to take tit-for-tat action.

²³⁸ Cemex noted that some correlation between wins and losses was to be expected in a market with only four large suppliers, since, when a supplier sought to recover lost volumes, it would occasionally get those volumes from the Major to which it had lost volumes. Lafarge Tarmac told us, in its [response to provisional findings](#) (paragraph 118) that in a concentrated market with only three large players, the correlation between wins and losses would fail to distinguish between targeted responses and non-targeted responses. We agree that this could be the case; however, if the recovery of lost volumes were random, we would expect to see no consistent relationship between the timing of wins and losses between a pair of suppliers (ie we would expect correlation coefficients not to be statistically different from zero). Aggregate Industries noted that we had not controlled for other factors that could result in correlation but not be related to tit-for-tat behaviour, such as plant closures or differences between customer types. We agree that we did not control for these other factors. However, we had direct evidence in internal documents of tit-for-tat behaviour occurring in the case of the Top 3 GB cement producers, and our statistical analysis was consistent with this.

²³⁹ Cemex told us in its [response to provisional findings](#) (paragraph 8.23) that in relation to this analysis, two-thirds of the statistically significant correlation coefficients in Table 17 of Appendix 7.9 related to pairs involving Tarmac (despite our view that Tarmac was a fringe player), leaving just 2 out of 12 correlation coefficients relating to pure pairs of the Top 3 producers. However, as set out in the second footnote to paragraph 8.289(b), the same behaviour (ie tit for tat) is capable of serving more than one purpose. In the case of Tarmac, it ensures that Tarmac, as a member of the competitive fringe, does not grow its overall market share.

competition/deviation punishments, but rather constituted ongoing continuous competition to secure business from buyers. Lafarge Tarmac, in its response to our provisional findings, made a similar comment: it told us that if tit-for-tat behaviour was continuous then deviation was continuous as well, and that this meant that competition was taking place.²⁴⁰ We disagreed with Hanson and Lafarge Tarmac. As set out in paragraph 8.255, tit-for-tat strategies can be used both as a mechanism to rebalance shares on a short-term basis, as well as a mechanism to deter deviations. In addition, for the reasons set out in paragraph 8.228, a degree of competition is not incompatible with coordination.

- 8.264 Cemex told us that the reason for any observed rebalancing of market shares and tit-for-tat behaviour was that GB cement producers would compete hard to recover volumes that had been recently lost, and that this was pro-competitive. Lafarge Tarmac made a similar argument in its response to our provisional findings: it told us that regular wins and losses were consistent with competition, and that the negative autocorrelation in market shares could not distinguish between competition and coordination.²⁴¹ Lafarge Tarmac also argued in its response to our provisional findings that, in order to recover share, a Top 3 supplier must have lost share in the first place, and that the CC had accepted that there was documentary evidence of the Top 3 suppliers seeking to win share (see paragraph 8.150(a)).²⁴² Lafarge Tarmac told us that these observations indicated a competitive market and were consistent with the results of the CC's correlation analysis. Whilst we accepted that, in a competitive market, firms would compete to recover volumes when they had experienced a loss, we would not expect firms in a competitive market (where these firms have significant excess capacity) only to compete to gain volumes when they had lost share. In addition, in a competitive market, we would expect firms which had lost volumes to attempt to gain back volumes from the market as a whole, rather than mainly targeting customers of the producer which won the volumes from them. Such competitive behaviour would therefore result in less stable market shares than we observed: ongoing competition to gain volumes generally as well as producers seeking to recover any lost volumes from all other producers in the market would generate greater instability in market shares and make balancing of market shares over time unlikely. Similarly, Cemex also told us that the positive correlation in wins and losses that we found between the Top 3 suppliers was to be expected in a market with a small number of players: according to Cemex, when a producer lost share, it would seek to recoup share. Cemex told us that, because of the small number of players in the market, this would result in correlation in wins and losses. We noted, however, that our review of internal documents showed direct evidence of intentional tit-for-tat behaviour (see paragraphs 8.96 to 8.100 and 8.152 to 8.183). In paragraph 8.150(a), we set out our view that, according to the internal documentary evidence, Cemex, Hanson and Lafarge wanted to increase market share in a limited manner only. Moreover, as explained above, competition to gain volumes generally, alongside competition to recover lost share from the market as a whole, would be likely to result in much larger volatility in market shares over time.
- 8.265 The vertical integration of cement producers into downstream operations (including RMX) provides further opportunities to impose costs on any deviator that is also vertically integrated into downstream operations, for example through changes in the amount or terms of cross-sales, where these exist.

²⁴⁰ [Lafarge Tarmac response to provisional findings](#), paragraph 90.

²⁴¹ *ibid*, paragraph 117.

²⁴² *ibid*, paragraph 119.

- *Changes in the amount or terms of cross-sales*

8.266 As set out in paragraph 7.228, there have been large changes in the extent of cross-sales between the Majors over time, with large reductions since 2009. We also found that some of the changes in cross-sales had been defensive: for instance, in 2009, when Hanson internalized purchases from Lafarge, Lafarge reacted by internalizing its own purchases as well as increasing sales to [X] and [Y] (see paragraphs 7.230 to 7.238).²⁴³ This suggested to us that changes in the amount or terms of cross-sales could be used as a mechanism for rebalancing shares (or possibly even as a retaliation mechanism, although we acknowledged that the scope for large-scale retaliation via this route was much smaller now than in the past, as a result of the decline in cross-sales).

8.267 We also found some evidence in the Majors' internal documents of changes in cross-sales being used as a mechanism to signal to a potential competitor that a change in market shares or a deviation had been detected:

(a) In an internal Lafarge email, dated 2007, in response to Cemex repatriating volumes from Lafarge, [Lafarge Senior Cement Executive] suggests stopping Lafarge sales of cement to Cemex 'in the far SW, stating that we are short of material, and do it urgently. This might bring them to the table'.

(b) In an internal Cemex email dated 2008, [Cemex Senior Cement Executive] says that Lafarge is going to repatriate [X] for its RMX plants in the [Y] and writes: 'LF cement feel we [Cemex] have been aggressive against them in the market. I pointed out to him that year-to-date they have taken around [X] of business from us ... Following this news I have asked [Cemex Senior Executive] to move the CX [Cemex] mortar plants in [Y] to CX [Cemex] cement supply ...'.

(c) We see another example of Cemex internalizing volumes from Lafarge in response to Lafarge having gained two large customers from Cemex ([X] and [Y]) in an email from [Cemex Senior Cement Executive] to [Cemex Cement Employee], dated September 2005, in which [Cemex Senior Cement Executive] writes:

... we should look to take back ALL the volume we are going to lose to Lafarge as a result of the [two large customers'] aggression as soon as possible (ie now, before we lose it). ... This will give a temporary increase in market share which will hopefully cover some of the loss of cement volumes we are seeing through the RMX sector. Please can you arrange for the outstanding volume to be taken off Lafarge this week and make sure that all parties know why the change is taking place.

(d) In an internal Lafarge email dated 18 June 2010 [Lafarge Senior Cement Executive] writes that: 'We're getting reports back from customers, including [X], that Hanson are preparing to take some action in the Market in response to our impending Cem III launch. **We should probably expect Hanson to take SW plants back in-house.**' (Emphasis added.) This email suggests Lafarge

²⁴³ We also noted, in our study of the Hanson internalization, that the pricing of cross-sales may also be used as a mechanism to retaliate against deviations. The correspondence between Lafarge and Hanson showed that one of the strategies of Lafarge in reaction to the proposed internalization by Hanson was to attempt to increase the prices charged to Hanson (which Lafarge Tarmac told us was to reflect the decrease in the volume supplied by Lafarge to Hanson) and to withhold end-of-year rebate payments.

anticipates Hanson retaliating to Lafarge launching a CEM III product (which would be a threat to GGBS-based blends) by repatriating volumes in-house.

8.268 We also found internal documentary evidence of changes in cross-sales being used to rebalance market shares. For example, in an email exchange from June 2012 titled [Company X Senior Cement Executive] writes to [Company X Senior Cement Executive]: ‘Nope we are committed to **maintain our share** ... my question is, is this the best quality share we can get? If the answer is yes then we keep it until we can get something better in [X]. We will see May market share figures [presumably, MPA] end of this week ... that may also help us to decide.’ (Emphasis added.) [X] responds: ‘Ok let’s see what number we get. We now have better quality market share in [X] by going internal and ditching [X]% but the attacks by [X] has put a big dampener on that plan. I think we should take [Company Y] supplied plants off them in [X] and let [X] go’. This suggests that [Company X] is contemplating repatriating plants from [Company Y], but in exchange letting a customer [X] go.

- *Other punishment mechanisms*

8.269 We noted that the multi-market contact between the Majors (for example, in GGBS, aggregates and RMX, and in international cement markets) created other opportunities for punishing deviations from the coordinated outcome in the GB cement markets. We also noted that, because we had not observed any large-scale deviations, there was a lack of evidence of any large-scale punishments taking place. In addition, due to the limits of our jurisdiction, we did not have powers to collect evidence in relation to the GB producers’ behaviour in non-GB markets. In any event, we thought that it was likely that the threat of a price war in the GB cement markets was one of the main punishment mechanisms deterring large-scale deviations, and that this punishment mechanism would be sufficient to deter such deviations. We did not therefore explore these other punishment possibilities in more detail, with the exception of incentives to deviate and ability to punish in RMX markets (see Appendix 8.5).

- *Accidental punishment and/or erosion of prices*

8.270 The amount of information available to firms may not give firms perfect visibility of the market, and there is a risk that incorrect or accidental punishment may take place when no deviation has actually occurred. This may generate instability in coordination. Given the amount of information available to firms on their monthly share of GB production (see paragraph 8.215) and the feasibility of monitoring customer switching (see paragraph 8.217), as well as the presence of vertically-integrated firms in downstream markets for cement (which enables the gathering of information on downstream demand conditions—see paragraph 8.216), we considered such risks to be low.²⁴⁴ In particular, by monitoring both share of production and switching, the GB producers will in most cases be able to distinguish, when they have experienced a reduction in their monthly production share, whether this is due to a loss of customers to other members of the coordinating group (ie a deviation requiring action), whether it is due to loss of customers to fringe players, or whether it is due to their own customers not performing well in downstream markets.

²⁴⁴ Cemex told us that the risks of accidental punishment would be high as a result of large cement customers multi-sourcing cement for their different job sites. Cemex argued that, in reducing prices to a single job site to punish the existing supplier to that job site, the punishing cement supplier would run the risk that the customer might demand a similar price at its other job sites from either its existing supplier to those sites or another supplier. We first noted that the large majority of bulk cement customers have only one job site (around 600 out of the 900 customers—see Appendix 7.9). In addition, for customers with several job sites, the existence of different transport costs would make price comparisons more difficult across job sites located in different areas, and producers could use this—and other differentiating factors—to resist price reductions at other job sites.

8.271 Cemex argued in its response to our provisional findings²⁴⁵ that the risk of accidental punishment was very high due to firms' aggressive targeting of each other's customers, and extensive customer switching. It further argued that²⁴⁶ there were examples of GB producers seeking to win volumes outside the context of retaliation, and that, unless every win was punished by a full recovery of any lost volume, it made it unworkable to distinguish deviation from, presumably permissible, retaliation. Cemex submitted that this would make the risk of accidental punishment very high. However, as explained in paragraph 8.228, a degree of customer switching is compatible with coordination. Provided there are mechanisms for re-establishing market shares (as we believe to be the case), such competition within bounds does not undermine coordination, nor does it constitute accidental punishment. Transparency of market shares enables balancing of all switching so that market shares are maintained, and it would not therefore matter how a particular switch was labelled.

- *Conclusions on internal sustainability of coordination*

8.272 We concluded that it was likely that coordination in the GB cement markets on the basis of shares of sales was internally sustainable, given the low gains from deviation, the existence of an effective mechanism to rebalance market shares, and the likely existence of an effective deterrent mechanism for large-scale deviations, ie a return to competitive prices for a period of time (a price war). We also concluded that the risk of incorrect or accidental punishment was low in the GB cement markets.

External stability

8.273 The Guidelines state²⁴⁷ that the external sustainability of coordination may be:

- (a) facilitated by barriers to entry or expansion;
- (b) affected by the number, size, cost and profit margins and output expansion capability of non-coordinating firms (the competitive fringe) in the market—in particular the existence of a 'maverick' (ie a firm that has capacity to take significant share from the coordinating group of firms, but has substantially different incentives from the firms in that group); and
- (c) undermined by countervailing buyer power of customers.

- *Barriers to entry and expansion*

8.274 We found that there were significant barriers to entry into GB cement production, whether by setting up a new cement plant or by setting up a new grinding mill. Whilst we found that there would be few barriers to expanding GB cement production within the current capacity constraints of the existing GB cement plants and grinding mills (see paragraph 7.60), all these cement plants and grinding mills are owned by the existing GB cement producers.

- *The competitive fringe*

8.275 We compare Tarmac's incentives with the incentives of the other GB producers in paragraphs 8.336 to 8.340, noting in particular Tarmac's capacity constraints and

²⁴⁵ [Cemex response to provisional findings](#), paragraph 8.33.

²⁴⁶ *ibid*, paragraph 8.35.

²⁴⁷ The Guidelines, [paragraph 255](#).

high degree of vertical integration into downstream operations (including RMX). While Tarmac is no longer a separate GB cement producer following the formation of the Lafarge Tarmac JV in January 2013, we examined the role played by Tarmac in the GB cement markets prior to 2013 in order to help us interpret the evidence available to us from that period, and the results of our analyses based on that evidence. We find that, although Tarmac was outside the coordinating group of firms (ie it was a fringe cement player), it lacked both the incentive and ability to significantly undermine coordination and its pricing behaviour was aligned with that of the other cement producers. We consider the impact of recent market developments in paragraphs 8.349 to 8.407.

8.276 The other source of cement supplied in GB, other than the cement which is produced in GB, is cement imported into GB.^{248,249} In paragraph 7.123, we found that, while there is evidence that the GB producers regard imported cement as a competitive threat, the strength of the competitive constraint from imported cement (and thus the ability of cement importers to undermine coordination) was limited because:

- (a) the GB cement producers had a substantial cost advantage over cement importers in competing for customers at the margins;²⁵⁰
- (b) the higher costs faced by cement importers created incentives for them to price their cement just below the price of GB produced cement;²⁵¹ and
- (c) the GB cement producers considered, and in some cases took, specific steps to undermine the viability of imported cement, such as applying pressure to restrict cement supplies to independent importers, purchasing of import terminals and/or importers, leveraging of contacts with importers in other markets and targeting lower-priced cement selectively at customers of cement importers.²⁵²

8.277 We found that importers have grown their share of the market from 2007 to 2012, but that much of that growth happened from 2008 to 2009, since when importers' share of sales in GB have remained stable at only around 12.5 per cent.

8.278 We also found that the high degree of vertical integration by the GB cement producers created a barrier to entry and expansion for independent cement importers (see paragraph 7.86 to 7.88).

²⁴⁸ This may include cement 'imported' into GB from Northern Ireland.

²⁴⁹ Hanson told us that some of the importers were part of non-GB cement producer groups and that it was therefore misleading to categorize them as being part of a competitive fringe, as they were often publicly listed multinational corporations that were vertically-integrated cement majors in their own right, with, according to Hanson, limitless cement capacity and with turnovers exceeding the entire combined Heidelberg/Hanson international group. However, we noted that none of these importers had facilities to produce cement in GB, and that the same cost disadvantages applied to these importers as to other independent importers.

²⁵⁰ We consider that cement imports into GB take place despite the cost disadvantages faced by importers because it would not be a profit-maximizing strategy for the GB producers to price all imports out of the market (although, as noted in paragraph 7.101, this would not necessarily preclude the GB producers taking action to price a particular importer out of the market). Indeed, in order to price all imports out of the market, GB producers would need to sacrifice margin for a relatively low increase in total market share of less than 15 per cent to be shared between four GB cement producers. It is therefore likely to be in their interest to maintain higher cement prices and sacrifice some sales to importers.

²⁵¹ Cemex told us that our argument assumed that the independent importers took part in a tacit agreement with the GB cement producers. We disagreed: we considered that it was in the individual interests of GB cement importers to adopt such pricing behaviour to maximize profits, given their higher cost base and the risk as a consequence that they could be priced out of the market if they significantly undercut the GB cement producers. Hanson, in its [response to provisional findings](#) (paragraphs 10.12–10.16) said that it was inconsistent for us to argue that importers had an incentive to price their cement just below the price of GB-produced cement while also concluding that imports did not offer a competitive constraint, particularly in light of our view that there were no significant barriers to expansion for importers. However, our view is that importers offer a limited (rather than no) competitive constraint for the reasons given in this paragraph.

²⁵² Hanson told us that we had referred to evidence of Hanson competing for its competitors' customers as 'tit-for-tat' behaviour (in the case of GB cement producers' customers) and exclusionary behaviour (in the case of importers). Hanson considered that this was inconsistent and that the obvious and most simple explanation was that both 'types' of competitive activity were consistent with normal competition. We address this argument in the second footnote to paragraph 8.289(b).

- 8.279 In response to our provisional findings, Cemex submitted that, when assessing the ability of the competitive fringe to disrupt any coordinated behaviour, we should consider the competitive fringe as a whole rather than consider the role of importers and the role of other non-coordinating firms separately.²⁵³ In this context, Cemex noted that, going forward, the competitive fringe would account for around 30 per cent of the share of output (16 per cent accounted for by HCM and at least 13 per cent accounted for by importers, including Aggregate Industries).²⁵⁴
- 8.280 We have considered the impact of the competitive fringe as a whole, as well as analysing importers and domestic non-coordinating firms separately, in coming to our conclusions.
- 8.281 Cemex also noted that an examination of the case law suggested that the European Commission had typically found a competitive fringe to be effective if the market share of the fringe was greater than 20 per cent and ‘if such rivals are not subject to any significant barriers to expansion’.²⁵⁵
- 8.282 However, we consider that the impact of the competitive fringe will depend on precise circumstances in each case, and that attempting to derive a cross-case threshold in this manner is uninformative. In any event, we found that in this case the fringe firms face significant constraints to expanding their sales. Whilst HCM has more capacity than Tarmac (around [redacted] Mt compared with [redacted] Mt for Tarmac), this capacity is limited and HCM is still the smallest cement producer in GB. We also found that that the constraint from importers is limited as a result of (but not limited to) the difficulties they face in overcoming their cost disadvantage relative to GB producers (see paragraphs 7.98 to 7.101).
- *Countervailing buyer power*
- 8.283 If certain buyers possess buyer power, they may be able to limit the ability of GB cement producers to raise prices.
- 8.284 There was some evidence (see Appendix 7.5) of large customers ([redacted] and [redacted])²⁵⁶ obtaining particularly favourable terms for cement supplies, particularly if they were able credibly to threaten to import large additional quantities of cement instead. Such customers may obtain prices that are lower than other customers, although this may still be higher than the price that would prevail in a market in which there was effective competition.
- 8.285 Hanson told us in paragraph 6.5.17(c) of its response to provisional findings that buyer power was strong, and noted in support of this that independent customers represented [redacted] per cent of market; that they switched regularly (including to importers) and multi-sourced²⁵⁷ and that they had driven considerable reductions in price for three consecutive years 2009 to 2011.

²⁵³ For example, [Cemex response to provisional findings](#), paragraph 2.41.

²⁵⁴ *ibid*, paragraph 2.43.

²⁵⁵ *ibid*, paragraph 19.12.

²⁵⁶ It is also possible that large bagged cement customers may be able to negotiate more favourable terms than other customers.

²⁵⁷ Hanson told us in paragraphs 8.45.5 & 8.45.6 of its [response to provisional findings](#) that more than [redacted] per cent of customers had not merely sourced from more than one supplier but had in fact switched from more than at least three suppliers during the five-year review period, with more than [redacted] per cent having switched from at least four suppliers. Hanson argued that, even at a job-site level, most customers had not restricted themselves to a single supplier over time. However, we found that the majority of customers do not multisource simultaneously at the same job site (see Appendix 7.9, Table 6 and paragraph 27). Therefore, multi-sourcing over time was largely a result of customers switching suppliers over time. We explain in paragraph 8.228 why a degree of customer switching between GB producers is compatible with coordination.

8.286 Because cement prices are individually negotiated (see paragraph 7.170) and show dispersion (see paragraph 7.174) (ie there is price discrimination), even if some buyers can exert a degree of buyer power, this is unlikely to undermine the ability of GB cement producers as a whole to coordinate on sales of cement to other buyers. Only a modest proportion of total cement sales may be (to an extent) protected from the effects of coordination by buyer power (see paragraph 8.245).

- *Conclusions on external sustainability of coordination*

8.287 We concluded that it was likely that coordination in the GB cement markets on the basis of shares of sales was externally sustainable, given the high barriers to entry, the limited (although variable over time) constraint from imported cement and non-coordinating firms more generally, and the limited impact of countervailing buyer power.

Conclusions on the conditions for coordination

8.288 We concluded that, although the extent to which they were satisfied might vary over time, the conditions for coordination to be sustained were met, in relation to the ability to reach and monitor coordination, the existence of a mechanism for internal sustainability and the external sustainability of coordination.

Conclusions on the mechanism for coordination

8.289 Based on the evidence and the analysis we carried out, we considered it likely that coordination in these markets takes place as follows:

(a) Coordination on shares of GB cement sales made by the GB cement producers.²⁵⁸ Coordination on shares is strengthened by the relative stability and longevity of the GB cement customer base, facilitating transparency of customer allocation between Lafarge, Cemex and Hanson and allowing monitoring of wins and losses (see sub-paragraph (c)).

(b) Strategies to maintain stability of market shares. The following strategies provide opportunities for re-establishing shares of sales when these have changed.

(i) *Tit-for-tat*. If Firm A loses share to Firm B, Firm A will regain at least the equivalent volume from Firm B.²⁵⁹ This will quickly result in unchanged shares of sales.²⁶⁰

²⁵⁸ Cement sales in this context means overall sales of cement, including both bagged and bulk cement and different types of cement (CEM I, CEM II etc). Although we consider bulk and bagged cement to be in different product markets due to the lack of demand-side substitution between them, from the production point of view they are largely interchangeable. Hanson told us (paragraph 6.5.24 of its [response to provisional findings](#)) that we had opportunistically adopted a mechanism for coordination, for example by saying that coordination was on national market shares because regional market shares were more volatile. However, our finding that coordination was likely to be on national market share was based on assessing the evidence in the round, including on the transparency of national market shares on a monthly basis, alongside evidence on market share volatility. With respect to GGBS, we note that, even if GGBS is not the core product on which coordination may take place, retaliation in the event of deviation could encompass GGBS. There is evidence of this occurring in practice, such as during the 2009 internalization. In addition, it is possible that the threat of Lafarge or Cemex importing GGBS to sell to independent customers may also be an additional mechanism to prevent Hanson from deviating in cement.

²⁵⁹ See, for example, Appendix 8.2, paragraphs 51, 57 & 65; and Appendix 8.3, paragraphs 51, 52, 215, 216, 260–262, 296–298, 356, 364, 466 & 467.

²⁶⁰ Lafarge argued that, since it sought to regain lost volumes from Tarmac and importers as well as from Cemex and Hanson, such tit-for-tat behaviour was part of a competitive strategy rather than being evidence of coordination. However, the same behaviour is capable of serving more than one purpose. When directed at other members of the coordinating group, it rebalances market shares and deters deviation, whereas, if directed by members of the coordinating group at the competitive fringe, it deters further expansion by the competitive fringe where this might otherwise take place (ie in the case of cement

- (ii) *Cross-sales*. if Firm A's share has increased compared with B, it then increases volumes of cement purchased from B.
- (c) Monitoring of adherence to the coordinated outcome through each member of the coordinating group monitoring its own share on a monthly basis, using information from the MPA supplemented by monitoring of customers won and lost and from whom they were won/lost, and also using information on prices of cement gathered from cement customers and through cross-sales.²⁶¹
- (d) While there is no coordination directly on prices as these are individually negotiated, the desired direction of prices of cement is signalled through price announcement letters (which facilitate price parallelism, and soften customer resistance to price increases).²⁶²
- (e) Potential signalling of the desired level of prices for cement through members of the coordinating group accepting higher prices for cross-sales than might otherwise be the case²⁶³ (thereby signalling that the prices they charge to their own downstream operations, and to their customers, are also high—otherwise they would not be willing to pay high prices to other cement suppliers²⁶⁴).
- (f) Prevention of deviation: given that prices are individually negotiated, any deviations from coordination are most likely to take place by a firm approaching individual customers of other members of the coordinating group with low cement prices in order to induce these customers to switch.²⁶⁵ The existence of an effective mechanism to rebalance market shares through tit-for-tat (see sub-paragraph (b) above) is likely to reduce the incentives for the coordinating firms to seek to increase their market share. In addition to this, a return to competitive prices for a period of time (ie a price war) is likely to provide a deterrent for large-scale deviations. In addition to a price war, there are also other mechanisms which can be used to punish deviations:

importers). We considered that there are important differences in the incentives of Tarmac (which is, for example, capacity constrained) and the cement importers (which, for example, face cost disadvantages compared with GB-produced cement) which mean that they may not adopt equivalent tit-for-tat strategies and are not part of the coordinating group.

²⁶¹ A number of internal documents indicate a close monitoring of GB producers' own share. See, for example, Appendix 8.2, paragraphs 12, 146, 222 & 271. See, for example, Cemex 'Cement Commercial Updates' in Appendix 8.3, paragraphs 289 & 290, 342, 383 & 388. See, for example, Appendix 8.3, paragraphs 40, 46, 426 & 427 in relation to Hanson and Appendix 8.3, paragraph 382 in relation to Lafarge. The documents show that customers and volumes won/lost are monitored: see, for example, Appendix 8.2, paragraphs 49 & 50, 59, 146, 164, 271 & 275, and Cemex 'Cement Commercial Updates' in Appendix 8.3, paragraphs 342, 383 & 388. See, for example, Appendix 8.3, paragraphs 215, 296, 297, 306, 307 & 428 in relation to Hanson and paragraph 105 in relation to Lafarge.

²⁶² See, for example, Appendix 8.2, paragraphs 39, 186, 226 & 253.

²⁶³ See Appendix 8.2, paragraphs 277 & 278. Lafarge Tarmac argued in its [response to provisional findings](#) (paragraph 135) that cross-sales could not signal what price should be charged and noted that we had acknowledged that there was no coordination on price. Lafarge Tarmac argued that our only evidence that there was any successful signalling appeared to be a claim that there was parallelism of average prices. Lafarge Tarmac said that correlation of average prices could give no meaningful information on what any future individual price to an independent customer should be given that there were hundreds of different prices charged to its customers, and the agreed price could not be monitored as it was privately negotiated. Further, Lafarge Tarmac argued that cross-sales typically took place for locations where it was very expensive for a GB producer to supply its own cement, and hence it might be expected that cross-sales would be made at above-average prices, as the fall-back option of self-supply was relatively weak. In response to these arguments, we noted that levels of cross-sales had declined considerably in recent years, so that whatever role is played by cross-sales in the coordination mechanism, this role is less prominent now than in the past. However, we also noted that internal documentary evidence supported the use of cross-sales for signalling (see Appendix 8.2, paragraphs 277 & 278). Further, our argument is not that cross-sales signal the precise level of prices in the market, but that they signal the desired level of prices in general terms. Whilst we accepted that there might be geographical reasons for cross-sales being made at above-average prices, we also noted that cross-sales would generally be made in significant volumes, which would tend to work in the other direction (ie lower rather than higher prices). In any event, we considered that, regardless of whether there were objective reasons *in part* for higher prices, GB producers had the ability to agree to a higher price for cross-sales to signal commitment to higher market prices more broadly.

²⁶⁴ There are many examples of information on the prices of other GB cement producers being obtained from customers or via cross-sales. See, for example, Appendix 8.2, paragraphs 43, 212 & 220; and Appendix 8.3, paragraphs 175, 177, 206, 245 & 255.

²⁶⁵ The existence of a degree of such switching is compatible with coordination for the reasons set out in paragraph 8.228.

- (i) *Internalization.* Although not necessarily a credible punishment mechanism in all cases and at all times over the past five years (because of varying and declining levels of cross-sales), small-scale internalization may be sufficient for Firm A to signal to Firm B that an attempt at deviating has been detected (if Firm A purchases some cement from Firm B).²⁶⁶ If Firm A does not purchase cement from Firm B but sells cement to Firm B, another mechanism to signal that a deviation has been detected would be for Firm A to increase cement prices to Firm B, or to renegotiate any rebates that might be in place.
- (ii) *Other possible punishment mechanisms.* The extensive multi-market contact of the GB cement producers (for example, in GGBS, aggregates, RMX and asphalt) provide further opportunities for punishing deviations.²⁶⁷

8.290 We also considered that vertical integration of the GB cement producers into downstream operations (and RMX production in particular) was likely to be an important factor in the mechanism for coordination identified above, for the following reasons (see also Appendix 8.5):

- (a) It is likely to act as a barrier to entry and expansion into the cement market by fringe players (see paragraphs 7.86 to 7.88).
- (b) It increases considerably the amount of transparency in the market, in particular because it provides the opportunity and logistical justification for cross-sales of cement between the GB cement producers. Although cross-sales have reduced in recent years, they could increase again in future. Further, even low levels of cross-sales will continue to provide a justification for GB cement producers to send price announcement letters to each other, sometimes in advance of these letters being sent to other customers as a ‘courtesy’ (see the second footnote to paragraph 8.208). Cross-sales also increase transparency through the actual price that is agreed for these cross-sales. Even if the actual price which is negotiated is not systematically related to the price that other external customers receive, or to the price that is charged to internal customers, the price agreed provides information on both the price that the GB producer who is selling the cement is willing to accept, and the price that the GB producer who is purchasing the cement is willing to pay, and therefore a broad indication of the levels of prices that the two GB producers are seeking to obtain. In addition, discussions over the terms of cross-sales provide an opportunity to share information about cement prices, cement sales and market conditions more broadly, as part of the price negotiations that take place.²⁶⁸

²⁶⁶ See, for example, Appendix 8.2, paragraphs 47 & 164; and Appendix 8.3, paragraph 399.

²⁶⁷ For example, in response to Hanson’s 2009 internalization, Lafarge internalized its own purchases from Hanson, of which some were GGBS purchases switched to PFA—see paragraph 7.232(a). See also Appendix 8.3, paragraph 19, in which Hanson anticipates responses on GGBS for actions on packed cement.

²⁶⁸ Cemex told us in its submission of 5 September 2013 (paragraphs 2.26–2.28) that we were wrong to argue that reducing vertical integration reduced transparency. According to Cemex, while some vertical integration remained, the same level of transparency in the cement market would remain. Cemex submitted that the fact that RMX markets were local was irrelevant, as it was transparency in the cement market which mattered. Further, Cemex argued that, if we were correct that transparency were reduced with the loss of a presence in RMX markets, this contradicted our theory that Lafarge was the ‘leader’ of the coordinating group, since Lafarge was the least vertically integrated of all the GB cement producers. However, we consider that vertical integration enhances transparency in the cement market by providing the opportunity and logistical justification for cross-sales (and swapping of price announcement letters) and by giving better information on downstream demand conditions. In very approximate terms, about half of downstream demand for cement is for RMX production, for which the market is local. Therefore, the more local RMX markets in which a cement producer is present, the more transparency it has of demand conditions in the cement market. Although Lafarge Tarmac may have less transparency as a result of vertical integration than other GB producers (and Lafarge may have had less transparency via this route in the past), we consider that there are other sources of transparency in the GB cement markets that are sufficient to enable Lafarge to take on a leadership role in the coordination (see paragraph 8.206).

(c) The existence of cross-sales provides a means for GB cement producers to rebalance shares of sales (by increasing or reducing cross-sales when necessary) and to signal that deviations have been detected through small-scale internalization or changes in the terms of cross-sales.²⁶⁹

- 8.291 Whilst there is, in our view, direct evidence of many aspects of this mechanism for coordination taking place (for example, tit-for-tat rebalancing and monitoring of shares), there is less direct evidence for some other aspects (for example, cross-sales being used to re-establish shares of sales when these changed). However, in relation to these latter aspects of the mechanism for coordination, we have found evidence that there are opportunities for the members of the coordinating group to behave in the way we have suggested. We think it unrealistic to expect to obtain direct evidence as to whether or not these opportunities are in fact exploited, given the nature of the behaviour concerned and our inevitable lack of complete information about the markets we are investigating.²⁷⁰
- 8.292 Some aspects of this mechanism for coordination (such as the scope for transparency and punishment of deviation through cross-sales) may not have been in operation for all of the time period we analysed as a result of significant changes in the market during this period. However, we do not consider that this variability in some of the detailed aspects of the mechanism for coordination is sufficient to undermine the mechanism as a whole. For example, even in the absence of cross-sales, the threat of a price war would, in our view, still be sufficient to maintain the internal stability of the coordination.
- 8.293 Hanson argued that an academic paper²⁷¹ had pointed out that coordination on market shares was unlikely to be successful unless complemented with side payments between coordinators. We first noted that a well-established mechanism for rebalancing shares of sales among the coordinators would be likely to eliminate the need for side payments. As set out above, in this case, tit-for-tat strategies and cross-sales can be used to rebalance market shares, and are therefore likely to eliminate the need for side payments. We also noted that the article quoted by Hanson did not find that side payments were a necessary condition for coordination on market shares: rather, it found that, in an environment where neither prices nor quantities were observable,²⁷² and therefore where coordination would be unlikely in most models, side payments could be a mechanism to make coordination on prices sustainable.

Variation over time in the evidence base

- 8.294 During the period of time covered by the evidence and our analysis (which, in the later case, was largely the period since 2007), there has been variation in aspects of the cement markets that are relevant to our assessment of coordination. Not

²⁶⁹ Hanson told us in paragraph 6.5.19 of its [response to provisional findings](#) that the CC's approach to vertical integration was inconsistent: on one hand, the CC said that vertical integration facilitated coordination, on the other hand, the CC created HCM as the most vertically-integrated cement producer. However, requiring the divestment of assets that led to the creation of HCM was a remedy to the SLC identified by the CC as otherwise arising from the Anglo-Lafarge JV. It was not intended to remedy any coordination in GB cement markets.

²⁷⁰ Hanson told us in paragraph 6.5.25 of its [response to provisional findings](#) that there was no evidence of any firm deliberately giving up market share to allow market shares to be 'rebalanced', nor of any member of staff being so instructed. However, as noted above, we would not necessarily expect to see much documentation of such voluntary relinquishing of customers, given its nature. Nevertheless, we consider that the internal documents quoted in paragraph 8.133 and Appendix 8.2, paragraph 12, provide some limited evidence of this behaviour occurring in practice.

²⁷¹ Hanson quoted Harrington and Skrzypacs: 'Private monitoring and communication in cartels: explaining recent collusive practices', *American Economic Review*, 2011.

²⁷² We note that this is not the environment in which the GB cement markets operate, in that (among other sources of transparency) total GB cement sales and own market shares are observable on a monthly basis through the publication of MPA data.

unexpectedly, our direct and indirect evidence indicates differences in the extent or success of coordination at different times within this period.

8.295 In this subsection, we examine the key developments in the GB cement markets since 2007. We consider that these provide an important context for our assessment of the evidence, and compare the timing of these developments with trends in the evidence base and in the results of our analysis. Our aim was to understand whether and how changes in market conditions might have affected the incentives and ability of firms to coordinate over this period, and what this might indicate for our competitive assessment overall.

8.296 The key developments in the GB cement markets since 2007 that we considered were of sufficient scale that they might have had a readily observable impact on the coordination in those markets included:

- (a) a 36 per cent decline in cement sales in GB over the period 2007 to 2009, with only limited recovery in demand since 2009 (see paragraph 2.53);
- (b) a 27 per cent reduction in GB clinker production capacity from 2007 to 2011. The only significant increase in cement capacity over this period was made by Tarmac, which increased capacity at its Tunstead plant in April 2008 from [redacted] nameplate capacity to [redacted] nameplate capacity (see paragraph 7.18);
- (c) the acquisition in late 2007 of Hanson (predominantly an aggregates and RMX/ concrete block producer with no cement production) by Heidelberg (the owner of Castle Cement since 1998), giving Hanson cement production capacity in GB. In early 2009, as a result of this acquisition, Hanson internalized most of its cement purchases (see paragraph 7.230);
- (d) significant changes in the extent of the Majors' internal consumption of cement. These changes seem to be linked mainly to a large internalization of cement purchases by Hanson in 2009 and to Tarmac's increasing cement production capacity (see Appendix 2.3);
- (e) as described in paragraph 1.10, in December 2010, DG COMP announced that it had opened an investigation into suspected anti-competitive practices by several manufacturers of cement and related products in various European countries including the UK. [redacted]; and
- (f) the formation of Lafarge Tarmac and HCM in January 2013 (see paragraph 1.17). However, this development is too recent to observe any resulting effects in the 2011 and 2012 data available to us as an input to much of our analysis, at the time we were carrying out our investigation.

8.297 For the period since 2007, we observed the following main variations over time in our evidence and the results of our analysis:

- (a) The GB cement markets have remained highly concentrated, although Lafarge (and to a lesser extent Hanson and Cemex) has lost small amounts of market share to Tarmac and importers between 2007 and 2012 (see paragraph 7.8). We observed that Lafarge lost five percentage points of market share from 2008 to 2009, although it subsequently recovered some of this share.
- (b) The GB cement producers' variable profit margins have remained relatively stable. The 2008/09 demand slump did not have a negative impact on these margins (see paragraph 7.168).

- (c) CCA profitability after impairment losses (economic profitability) of the four GB cement producers exceeded on average the cost of capital throughout the period of review despite the slump in demand and the fact we measured profitability only over part of a business cycle. We did, however, observe that all the GB cement producers experienced a dip in economic profitability in 2008 and/or 2009, and again in 2012.
- (d) In broad terms, there was higher price dispersion for bulk cement in 2009 (particularly during Q1 2009) for Lafarge, Cemex and Hanson than in surrounding time periods. For [redacted] and [redacted], there was also higher price dispersion in 2011 (see paragraph 7.174).
- (e) The end of 2008 and all of 2009 were periods with relatively high levels of customer switching (see paragraph 7.179).
- (f) Customers switching from 2009 onwards achieved lower prices after switching on average, whereas this was not the case before 2009 (see paragraph 7.180).
- (g) The period prior to Q1 2009 was a period with large increases in average realized prices of cement—this was less the case after Q1 2009. In particular, announced price increases were realized more successfully for the multiple price increases in 2008 than in the following years (see paragraph 7.207).
- (h) Whilst the January price increase announcements for 2007, 2008, 2009 and 2011 were led by Lafarge, the January price increase announcements for 2010 were led by Tarmac and Hanson, with Cemex and then Lafarge announcing price increases afterwards, and with their increases not effective until March 2010. In addition, the January price increase announcements for 2012 were led by Cemex.
- (i) There was a shift over the period as a whole towards greater self-supply and lower levels of cross-sales between the Majors, apart from in areas where logistics implied that purchases from other Majors might be more economical (see paragraph 7.228).

8.298 In its response to our provisional findings, Lafarge Tarmac told us that market shares had not been stable and that Lafarge had lost ten percentage points market share between 2001 and 2010.²⁷³ It told us that its production share fell from 54 per cent in 2001 to 46 per cent in 2007, and that for the period 2007 to 2011, Lafarge's production share dropped from 46 to 40 per cent in 2009, rising again to 43 per cent in 2011. Hanson made a similar comment, stating that Lafarge's market share had declined very significantly over time.²⁷⁴

8.299 We did not consider that the declines in Lafarge's (and, to a lesser extent, Cemex's and Hanson's) market shares, and the growth in Tarmac's and importers' market shares, from 2007 to 2011 were indicative of a breakdown in coordination in the GB cement markets. Rather, these changes reflected the different roles of the market participants (see paragraphs 8.322 to 8.348). Nevertheless, we found that there were some indications that 2009 was a period of time when coordination in the GB cement markets might have been less successful, possibly as a result of a large internalization of cement purchases by one of the Majors at that time and/or the significant slump in demand in 2008/09. These indications included:

²⁷³ Lafarge Tarmac response to provisional findings, paragraphs 12–15.

²⁷⁴ Hanson response to provisional findings, paragraph 6.5.25.

- the reduction in Lafarge’s market share from 2008 to 2009 (subsequently partially recovered);
- the dip in economic profitability experienced by all GB producers in 2008 and/or 2009, and again in 2012;
- higher price dispersion; and
- higher levels of customer switching.

8.300 The year 2009 also appears to have marked a boundary between the pre-2009 period when the GB producers were able to achieve large increases in average prices of cement and the subsequent period when they were not.²⁷⁵ However, these changes do not appear to have had any lasting impact on the GB cement producers’ returns or variable profit margins. We also noted that the period after 2009 was characterized by relatively low levels of switching compared with the period up to 2009, and that many of the behaviours suggesting shortcomings in competition that were identified in the 2008 internal documents continued to be present in the 2012 documents.

8.301 The internal documents are consistent with a view that the balance between coordinated and competitive behaviour has not remained constant. They also show that attempts to achieve coordinated outcomes are not always wholly successful. The 2008 documents more clearly demonstrate Lafarge, Hanson and Cemex adapting their behaviour to achieve coordinated outcomes. The 2012 documents include many examples of price competition between cement producers.²⁷⁶ In relation to this last observation, as noted in paragraph 8.61, the 2008 documents are a selected set of documents, [redacted].

8.302 The trends that we observe in coordination, the balance between coordinated behaviour and competition, and the changes in economic and market context indicate that coordination in cement is not constant and unchanging but that it is influenced by external conditions. It also appears that attempts to reach coordinated outcomes have been more and less successful at different times. These conclusions are broadly in line with what we would expect where there is coordination in a market that is subject to the variations that we have observed since, in particular, 2007. However, we did not find evidence that there were intervals of time during this period when there was no coordination in the GB cement markets, and our observation of variation in the extent of coordination over time did not eliminate our concerns about coordination in these markets.

8.303 In response to our provisional findings, Hanson told us that there were inconsistencies in the evidence on outcomes over time: for instance, Hanson submitted that industry profitability was relatively low in 2008, but that the internal documents suggested that this was a period where coordination was most likely to take place; and similarly that the evidence on tit-for-tat behaviour was deemed strongest in 2009, even though this was a period where coordination may have been less successful.²⁷⁷ We disagreed with Hanson’s interpretation of our provisional findings: we did not conclude that coordination had broken down during any interval of time between

²⁷⁵ The lack of Lafarge leadership of the January price increase announcements in 2010 and 2012 was notable. However, as we did not consider that the price increase announcement letters were the focal point for coordination, we did not consider that the lack of Lafarge leadership of these two price increase announcement rounds indicated any material breakdown in coordination at those points in time.

²⁷⁶ As set out in paragraph 8.228, some competition between GB suppliers is compatible with coordination.

²⁷⁷ [Hanson response to provisional findings](#), paragraph 6.5.28 and Annex 1.

2007 and 2011; our provisional conclusion was that there had been variations on the extent of coordination during the period. We would not necessarily expect all evidence to point in the same direction in any particular year, reflecting the variety of changes in market conditions that arose and overlapped in certain periods.

Incentives to coordinate

- 8.304 We analysed the incentives of the GB producers to adhere to the mechanism of coordination described in paragraph 8.289, as part of our overall assessment of coordination.
- 8.305 The incentive to coordinate in cement is likely to be high: cement is a relatively homogeneous product which can be transported over large distances. This lack of differentiation implies that competition between cement producers on prices could be strong and lead to low returns, particularly in times of excess capacity.
- 8.306 The incentive of each GB cement producer to adhere to coordination will depend on the size of its potential profits from deviating (less the costs to it from retaliation) compared with its profits from coordination. This balance is likely to vary for each producer depending on:
- (a) its relative efficiency;
 - (b) its overall market share;
 - (c) its spare capacity; and
 - (d) the extent of its vertical integration (and hence its need to sell cement externally, which we term its exposure to external market sales).
- 8.307 Our analysis of the cost structures of the GB cement producers (see paragraph 7.130) showed that these were broadly similar, particularly those of [REDACTED], [REDACTED] and [REDACTED]. We therefore do not consider further whether differences in efficiencies of the GB cement producers may adversely affect incentives to coordinate.²⁷⁸
- 8.308 However, there are asymmetries between the GB producers in terms of market share, amount of available spare capacity and degree of vertical integration. We analysed how these might affect their incentives to coordinate. Table 8.1 shows, for each pre-2013 cement producer in GB, its share of GB cement production, its total spare clinker capacity and its total internal sales and total external sales in 2011 (2012 figures, where available, show a similar picture). We consider the impact of the formation of the Lafarge Tarmac JV, and the entry of HCM into the GB cement markets (which both took place in January 2013) in paragraphs 8.358 to 8.407.

²⁷⁸ Hanson told us that the EU ETS introduced additional complexities in aligning strategies because cement producers earned revenues both from producing (and then selling) cement and from not producing cement but selling unused carbon allowances instead. Our analysis (see Appendix 6.5) showed that it was more profitable for GB cement producers to produce cement than to sell carbon allowances. For this reason, we considered that the EU ETS was unlikely to affect decisions on total GB cement production, although it might affect decisions on how this production was distributed across different cement plants. Therefore, we considered it was unlikely that the ETS would introduce sufficient additional complexity adversely to affect GB producers' incentives to coordinate. Hanson further submitted that it had [REDACTED]—and that this created asymmetry between GB producers. As we set out above, we found that the EU ETS may have an impact on decisions on how to allocate production across a producer's plants, but was unlikely to affect total GB cement production. Therefore, we did not consider that [REDACTED] would affect incentives to coordinate.

TABLE 8.1 Capacity share, production share, internal/external sales split and spare capacity of the GB cement producers in 2011

	GB clinker capacity share %	GB production share 2011 %	Total internal sales 2011 tonnes	Total external sales 2011 tonnes	Spare clinker capacity in 2011 kt	Spare clinker capacity in % of total clinker capacity
Lafarge	[40–45]	[40–45]	[⊗]	[⊗]	[⊗]	[20–25]
Hanson	[20–25]	[20–25]	[⊗]	[⊗]	[⊗]	[10–15]
Cemex	[20–25]	[20–25]	[⊗]	[⊗]	[⊗]	[5–10]—or [25–30] with mothballed kiln
Tarmac	[10–15]	[10–15]	[⊗]	[⊗]	[⊗]	[5–10]

Source: GB cement producers—all cement products including bagged and bulk. Tarmac sales to TBP counted within internal sales.

Note: For Tarmac, we use cement capacity figures as set out in Appendix 7.2. Calculations do not include mothballed capacity.

8.309 We found that there were some differences between the GB cement producers in terms of their total share of capacity and of production, total spare capacity and the split of their sales between external and internal sales. In particular:

- (a) Lafarge is the largest cement producer in terms of capacity and production share, and is also the producer with the largest amount of spare capacity (both in absolute terms and as a proportion of its total clinker capacity). It is also the producer with the lowest level of internal cement sales, and with the highest exposure to external cement sales ([~~⊗~~] per cent of its sales are to external customers).
- (b) Although smaller than Lafarge, Hanson and Cemex are both significant GB producers, and are very similar in terms of their share of capacity and production and their internal/external sales split (with internal sales of around [~~⊗~~] per cent of their total cement sales).
- (c) Tarmac is the smallest GB producer in terms of capacity and production share; it is also the producer with the lowest spare capacity (both in volumes and in percentage of its clinker capacity). Its internal cement sales, though lower in absolute terms, are higher in relative terms than those of Hanson and Cemex and represent a significant majority of its sales ([~~⊗~~] per cent).

8.310 These asymmetries in capacity, market shares, degree of vertical integration and amount of spare capacity mean that different cement producers could be argued to have different incentives to coordinate.

Effect on incentives to coordinate of asymmetries in market shares and capacity

8.311 We considered whether market share asymmetries made coordination more difficult to achieve because a firm with a lower market share would have more to gain from a deviation (it would have a larger potential for an increase in sales if it deviated) and less to lose from retaliation (its profits from coordination would be lower with a smaller share, and therefore the difference between its profits from coordination and its profits following retaliation would be lower). However, this assumes that the smaller firm has equivalent capacity to the larger firm and is therefore able to capture a large part of the market if it deviates. In the case of the GB cement markets, the

reason for the asymmetries in cement market shares is likely to be largely due to differences in production capacities.²⁷⁹

- 8.312 In response to our provisional findings, Lafarge Tarmac told us that there was a contradiction in our approach. It submitted that, if coordination was on GB shares of sales as the CC argued, and if production capacity determined shares of sales, this contradicted the CC's assertion that there was no coordination on the main factor that determined those shares (ie capacity).²⁸⁰ Cemex made a similar argument in its response to our provisional findings.²⁸¹ We did not agree with Lafarge Tarmac's and Cemex's reasoning. We did not consider that the focal point for coordination was capacity, nor did we consider that accepted levels of shares were mechanically derived from each firm's capacity (see the first footnote to paragraph 8.208). Rather, we considered that the relative positions of the GB producers in terms of market shares would depend on their relative capacities, thereby resulting in higher accepted levels of shares for firms with greater capacities. Our view is that the relative positions of the GB producers in terms of market shares would arise from their different capacities but that this was compatible with coordination on market shares, within their accepted relative positions in the market.
- 8.313 We note from paragraph 8.308 and Table 8.1 above that the GB producers' production shares in 2011 and 2012 were very similar to their capacity shares (although [§]). The incentives on Hanson and Cemex to deviate will therefore be limited by their total cement capacity, and are likely to be similar, in that respect, to the incentives of Lafarge. In other words, the fact that production shares are aligned with capacity shares should minimize any asymmetries in the incentives to deviate between Lafarge, Hanson and Cemex.²⁸²
- 8.314 Therefore, we considered that the asymmetry in market shares and production capacity in the GB cement markets, which gives Lafarge a position as a market leader, was a factor which did not make coordination more difficult in the GB cement markets. The leadership role of Lafarge is analysed further in paragraphs 8.322 to 8.327.

Effect on incentives to coordinate of asymmetries in extent of vertical integration

- 8.315 One of the effects of vertical integration is likely to be that sales to a cement producer's own downstream operations are more secure than sales to external customers: whereas external customers may switch suppliers in the event of a change in relative prices, internal sales are unlikely to respond to the same dynamics.
- 8.316 The following hypothetical example illustrates this difference between internal and external sales. If Firm A's costs of producing cement increase relative to Firm B, and as a consequence Firm A's cement prices increase relative to B, this will have the following effects on Firm A's sales:

²⁷⁹ As set out in Ivaldi et al (2003), the question relevant to assessing the impact of asymmetries in market shares on coordination is why market shares are asymmetric, and how these factors affect coordination (see Ivaldi, Jullien, Rey, Seabright, Tirole, *The Economics of Tacit Collusion: Final report for DG Competition*, European Commission, March 2003: http://ec.europa.eu/competition/mergers/studies_reports/the_economics_of_tacit_collusion_en.pdf).

²⁸⁰ Lafarge Tarmac response to provisional findings, paragraph 19.

²⁸¹ Cemex response to provisional findings, paragraphs 7.2–7.6.

²⁸² Cemex told us that changes in the capacity in the market between 2007 and 2011 had increased asymmetry between the GB cement producers and therefore would have increased the difficulty in maintaining any coordinated outcome. We did not agree that the asymmetry between the Top 3 GB cement producers had increased between 2007 and 2011: as set out in Appendix 7.2, Cemex, Hanson and Lafarge each reduced cement capacity between 2007 and 2011.

- (a) External sales will be likely to reduce as some customers may switch to Firm B.
- (b) Firm A is unlikely to switch to Firm B for internal sales so internal volumes will remain with Firm A. There may be some reduction in internal volumes in so far as the increase in the cost of cement to Firm A's RMX operations may result in it losing sales. However, this effect is likely to be much less pronounced and immediate than the effect on external cement sales, because cement is only one of the inputs into RMX. The final price of RMX depends on the cost of other inputs such as aggregates, so the overall increase in the RMX price as a result of the cement price increase will be lessened. In addition, RMX demand may depend on factors other than price—particularly location, given the local nature of RMX markets.²⁸³

8.317 It is therefore likely that the effect of an increase in the price of cement on cement sales by Firm A will be lessened if Firm A has large internal sales. This means that differences in vertical integration generate differences in incentives to coordinate. The greater the level of external sales, the more a firm will have to lose during a retaliation phase because it cannot rely as much on guaranteed internal sales. In addition, a firm in such a position is also likely to be more affected by deviations by others. At the other extreme, a firm which consumes all its cement in its own downstream operations can only be punished through downstream prices. As explained in Appendix 8.5, this is likely to be a less immediate and effective punishment mechanism.

8.318 Lafarge Tarmac told us in its response to our provisional findings,²⁸⁴ in the context of our view at that time that retaliation could take place through small-scale tit-for-tat rebalancing of market shares, that firms that were more vertically integrated, or that were smaller, were not hurt less by deviation and retaliation than larger, or less vertically integrated firms. Lafarge Tarmac argued that if a deviating firm won 10 kt of cement and subsequently lost 10 kt as a result of a tit-for-tat retaliation, there was no reason to expect that a larger firm was hurt more than a smaller firm in terms of profit. Lafarge Tarmac told us that therefore, when looking at incentives, the question to consider was whether absolute profits were increased by coordinating as opposed to competing, not whether that profit was disproportionately generated from internal or external sales.

8.319 While our view is that an effective punishment mechanism exists in the form of a widespread return to competitive prices, with tit-for-tat strategies being used to stabilize market shares rather than as punishment (see paragraphs 8.254 to 8.264), we have considered Lafarge Tarmac's argument about the relative impact of loss of sales on more- and less-vertically integrated firms. In our view, the same absolute change in profits will be more important to a smaller firm compared with a larger firm, since it will represent a greater fraction of its profits. We considered that this could be expected therefore to have a greater impact on the behaviour of a smaller firm. Similarly, the same absolute change in profits would also have a greater impact in strategic terms on a less vertically integrated firm (where there would be a greater proportion of remaining sales also at risk of being lost and/or subject to lower prices)

²⁸³ In its [response to provisional findings](#) (paragraph 11.8), Cemex argued that we were wrong to claim that an increase in cement prices would not have an effect on RMX prices so as to lead to a significant loss of RMX sales. Cemex noted that cement was a crucial input to RMX, representing [X]. Cemex argued that, as the CC had found that RMX markets were competitive, it was contradictory to state as we did in our provisional findings that, even if an RMX producer had to increase its price, it would still have a strong advantage for customers located nearby. However, our argument is that the impact of a cement price increase on internal sales of cement is likely to be less pronounced than on external sales. We have not concluded that RMX markets are competitive, only that we found no evidence of widespread problems across multiple local RMX markets. In order not to lose sales, an RMX producer might be able to absorb some or all of a higher upstream cement cost. In such a scenario, it would earn a lower margin, but would not lose sales altogether.

²⁸⁴ [Lafarge Tarmac response to provisional findings](#), paragraph 128.

than for a more vertically integrated firm (where a greater proportion of remaining sales would be relatively 'safer' by virtue of being internal sales).

- 8.320 Lafarge Tarmac also submitted in its response to our provisional findings²⁸⁵ that our view that greater exposure to external sales made a firm more vulnerable to punishment, and gave it greater incentives to coordinate, was inconsistent with the remedy implemented by the CC following its investigation of the Anglo–Lafarge JV. In that remedy, the JV parties were required to divest RMX, thereby making the JV more exposed to external sales and therefore more likely, according to the CC's reasoning, to have greater incentives to coordinate. However, we do not agree with the proposition that the creation of HCM as part of the remedies required by the CC following its inquiry into the Anglo–Lafarge JV was designed to resolve the concerns that the CC had at that time about coordinated behaviour in the cement market. We consider further the impact of the entry of HCM, and the changes in its extent of vertical integration compared with Tarmac, in paragraphs 8.368 to 8.407.
- 8.321 In our view, the asymmetries between the GB producers in the extent of vertical integration—and the resulting differences in their incentives to coordinate—affects the roles of the GB producers in the market, as described in paragraphs 8.322 to 8.348, but are not sufficient to prevent coordination taking place.

Role of Lafarge (pre-2013)

- 8.322 Lafarge is the largest cement producer in GB (in terms of capacity and market share) and also the cement producer which is most reliant on sales to external customers due to the fact that its RMX share (at GB level) is low relative to its cement share. Overall, therefore, Lafarge is likely to be the cement producer which bears the highest risks in case of deviation by others: its profits will be most affected because of its high reliance on and high share of external cement sales.
- 8.323 The fact that Lafarge benefits most from coordination (because it is the largest cement producer), as well as being likely to bear the highest risks in case of deviation (because of its high reliance on external sales), may give Lafarge an incentive to take a leadership role in the coordination (such as through close monitoring and punishment of any deviations). It also gives Lafarge an incentive to take a greater proportion of any costs of coordination, such as the costs of accommodating the growth of the competitive fringe (in terms of market share loss). There was evidence that Lafarge had a leadership role in the cement market, thereby facilitating coordination:
- (a) Lafarge's market share had reduced the most in absolute terms as a consequence of (i) Tarmac increasing its cement capacity and (ii) importer growth (see paragraph 7.8), which suggested that Lafarge had taken most of the costs of accommodating the growth of the competitive fringe and which would be consistent with Lafarge aiming to maintain stability in the market.²⁸⁶ Lafarge Tarmac told us in response to our provisional findings that the fact that Lafarge had consistently lost market share since 2001 showed that, even if Lafarge were seeking to lose share in the short term to stabilize shares in the long term, this

²⁸⁵ *ibid*, paragraph 129.

²⁸⁶ Hanson told us that the GB producers had reacted differently to the demand slump, in terms of the extent to which they reduced their cement capacity, and that this demonstrated clear asymmetry and a lack of stability in any theory of coordination. Hanson argued that it was not clear, for example, whether these reactions were accommodating and how these would allow prices to be coordinated upwards. We noted that Lafarge, Hanson and Cemex had all reduced cement capacity following the demand slump, and that Lafarge had reduced capacity the most. However, as set out in the first footnote to paragraph 8.208, we did not consider that the focal point for coordination was capacity, nor that the accepted shares of sales for each coordinating firm were mechanically derived from each firm's capacity.

policy had not worked.²⁸⁷ Cemex made a related point in its response to our provisional findings,²⁸⁸ arguing that it was inconsistent to say that the relative market shares of the Top 3 cement producers had remained stable whilst also acknowledging that Lafarge's share had reduced significantly over time as a result of Lafarge 'leading' the coordination. We did not agree with these interpretations of our findings. We noted that there had only been small changes in market shares over the period 2007 to 2012 despite the significant slump in demand from 2007 to 2009 (see paragraph 8.6). We did not state that Lafarge was losing share in the short term to stabilize long-term shares; rather, the evidence suggested to us that Lafarge had conceded market share in the long term, not with the goal of stabilizing shares per se, but in order to stabilize the market (in terms of prices and margins) when faced with the growth of the competitive fringe.

(b) Our analysis of cross-sales (see paragraphs 7.224 to 7.229 and Appendix 7.13) showed that, despite large reductions in cross-sales as a consequence of internalizations, Lafarge remained a large seller of cement to each of the other Majors (with the exception of Tarmac) in 2011, selling over [redacted] per year to Cemex, Hanson and Aggregate Industries. This provides a means for Lafarge to signal to Hanson and Cemex, through change in terms of cross-sales, when a deviation has been detected. The fact that Lafarge continues to sell cement to all other Majors also means that any Lafarge price announcement letters would be sent to all other Majors, in their capacity as customers of Lafarge.²⁸⁹

8.324 Lafarge Tarmac told us in its response to our provisional findings²⁹⁰ that its greater focus on RMX value added products (VAPs) was an important asymmetry that could undermine coordination. According to Lafarge Tarmac, this focus gave it a strong incentive to source cement internally to ensure tightly controlled properties, and it also gave it a differentiated position in the RMX markets, bringing benefits (in terms of choice and cost savings) to RMX customers.

8.325 However, we noted that Lafarge already had a prominent VAP strategy before the Lafarge Tarmac JV, without this having prevented or significantly destabilized coordination. In addition, the CC looked into Lafarge's claims about VAPs during its Anglo-Lafarge JV inquiry. At 6.250(c) of the Anglo-Lafarge final report the CC said:

According to the main parties, the roll-out of RMX VAPs by the JV entity would destabilize coordination in two ways: (i) it would reduce the scope for cement cross-sales (since the JV entity would not want to reveal the specifications for the cement required to manufacture its VAPs to an external cement supplier); and (ii) it would increase asymmetries with other cement producers (as Cemex and Hanson had limited involvement in VAPs). However, the main parties told us that the JV entity would make very limited purchases of cement in any event (see paragraph 6.209). Further, differentiation in the RMX market (for example, through the development of VAPs, which continue to require

²⁸⁷ [Lafarge Tarmac response to provisional findings](#), paragraph 126.

²⁸⁸ [Cemex response to provisional findings](#), paragraph 11.13.

²⁸⁹ Cemex told us in its [response to provisional findings](#) (paragraphs 11.14–11.16) that, while we alleged that the fact that Lafarge supplied cement to other GB producers gave Lafarge leverage over them, Cemex's [redacted]. Cemex submitted that we had failed to mention that Lafarge's sales to other GB producers also made Lafarge more susceptible to internalization. However, our argument is that Lafarge's cross-sales provide means for Lafarge to signal that deviation has been detected and an apparently legitimate justification for sending them price announcement letters (not that cross-sales give Lafarge particular leverage over the other GB cement producers per se). As set out in paragraph 8.290(b), even low levels of cross-sales can facilitate coordination.

²⁹⁰ [Lafarge Tarmac response to provisional findings](#), paragraphs 131 & 132.

cement as a key input) would not undermine coordination on shares of total production in the bulk cement market.

8.326 In a footnote to this paragraph, the CC also said that

In addition, whilst it appeared that Lafarge had a strong position in the market in relation to VAPs, its VAP product range overlapped to a certain extent with that of the other UK majors and certain independent RMX producers. We were told that chemical companies developed admixtures (such as plasticizers, waterproofing agents and corrosion inhibitors) which they placed on the general market, and which would enable any RMX producer to develop certain types of VAPs.

8.327 We agreed with this assessment that Lafarge Tarmac's focus on RMX VAPs was unlikely to undermine coordination. We also noted that all cement producers already had strong incentives to source cement internally for their RMX operations to avoid paying a margin to a rival producers.

Roles of Hanson and Cemex

8.328 Hanson and Cemex are both medium-sized cement producers, with similar cement capacities and market shares. Hanson and Cemex operate with a degree of excess cement capacity. The proportions of their cement sales which are internal are very similar.

8.329 Hanson, Cemex and Lafarge have similar profit drivers, in that their respective cement divisions make the largest contribution to their consolidated profits (see paragraph 7.130). Cemex told us in its response to our provisional findings (paragraph 11.10) that it was not sufficient to state that [REDACTED]. It argued that its and Hanson's RMX divisions had made significant negative contributions to their respective consolidated EBITDA, and that this would result in their incentives being different from those of Lafarge. It added (and we agreed) that [REDACTED]. Whilst we accept that the difference in the respective performance of the GB cement producers' RMX operations may be a source of asymmetry between them, this does not detract from the significant contribution made by the cement operations to their respective GB operations in contrast with the position of Tarmac, and ultimately their incentives to coordinate.

8.330 Cemex and Hanson are likely to have strong incentives to adhere to the coordination: they benefit strongly from coordination due to their size, they can be punished in the event of a deviation because of their relatively large external sales of cement, and can punish others due to the fact that they hold excess cement capacity. The evidence suggested that Cemex and Hanson's behaviours in the market (replying to loss of customers or cross-sales by taking rebalancing actions against the producer responsible, strategic objectives of stability of shares of sales and price announcement behaviour, among others) were consistent with coordination between Lafarge, Hanson and Cemex.

8.331 In its response to the provisional findings, Hanson told us that there was no evidence in the provisional findings that Hanson and Cemex were price followers following Lafarge's leadership. Hanson submitted that the evidence on price parallelism pointed to the contrary: Hanson's de-trended prices [REDACTED]; whereas Lafarge's de-trended prices [REDACTED].²⁹¹ We did not state that Cemex and Hanson were price followers;

²⁹¹ [Hanson response to provisional findings](#), paragraphs 11.14 & 11.15.

what we found is that GB producers tended to follow each other in terms of price announcement letters, in the sense that they would announce similar increases for the same date (see paragraphs 7.192 to 7.204). We found that this price announcement behaviour facilitated price parallelism.

- 8.332 Our ROCE calculations use a single depreciation profile which is neither firm- nor plant-specific. This means that, while in principle higher operating costs are already taken into account in our ROCE calculations, there remains scope, for example, for firms with higher operating costs to exhibit lower profitability in our analysis. We consider that such higher operating costs are likely to contribute to the [REDACTED] figures exhibited by Cemex—and to an extent Hanson—over the time period analysed in Table 7.11. In any event, we consider that, but for their participation in coordination in the GB cement markets, Cemex and Hanson’s profitability would have been [REDACTED].
- 8.333 In its response to our provisional findings,²⁹² Cemex made a number of arguments in relation to our understanding of Cemex’s role in the GB cement markets. Cemex told us that, contrary to our claims, Cemex did not have strong incentives to coordinate, pointing to the fact that Cemex was not the largest cement producer, that Cemex had excess capacity, that there was evidence of Cemex’s competitive behaviour in the market, and that [REDACTED] Cemex reiterated that, in its view, this contradicted the literature on incentives to coordinate.
- 8.334 However, we considered that Cemex, as a significant producer of cement, still had a lot to lose from a reversion to competitive conditions in the market, especially as [REDACTED], as Cemex itself accepts. We explain how a degree of switching and competition within bounds is compatible with coordination in paragraph 8.228. We accepted that Cemex had excess capacity—in our view this gave Cemex the ability to punish deviations.
- 8.335 In relation to the literature on the impact of inefficiency on incentives to coordinate, we looked in detail at the two papers to which Cemex referred. However, our view that, but for their participation in coordination in the GB cement markets, Cemex and Hanson’s profitability would have been [REDACTED] was not a comment on the relative ease with which collusion can be sustained. Rather it is an observation on the results of our profitability analysis. As such, the two papers cited by Cemex—which look at conditions for collusion to come about and be sustained—are not relevant here. In any event, the collusive arrangement in the model developed in one of these papers is one where the share of the market is in line with the relative efficiency of the coordinating firms, which does not appear to be the case in the GB cement markets. In the model developed in the other paper, all firms are equally efficient, with marginal costs assumed to be constant and the same for all firms, which is also not the case in the GB cement markets.

Role of Tarmac (pre-2013)

- 8.336 Tarmac was in a very different position from that of Lafarge, Hanson and Cemex. It had the lowest market share and production capacity, and was the producer with the highest degree of vertical integration. Unlike Cemex, Hanson and Lafarge, whose production of cement largely exceeds their needs for cement for their internal businesses, Tarmac was until recently ‘short in cement’ (ie its total production was insufficient to fulfil its demand for cement), and in 2011 was broadly self-sufficient. Tarmac also appears to have had the most modern and most efficient cement plant in GB (see Appendix 6.5), which it operated at full capacity utilization unlike Lafarge,

²⁹² [Cemex response to provisional findings](#), paragraph 11.17.

Hanson and Cemex's plants. Tarmac was also different because, unlike Lafarge, Hanson and Cemex, its cement division contributed only [REDACTED] per cent to its consolidated profits (see Appendix 6.5), which implies that it had different profit drivers.

- 8.337 Tarmac told us that, as a result of its very high degree of vertical integration and its strategy of self-supplying cement, it only sold cement to external customers on an opportunistic basis, when the margins achieved on external sales exceeded any loss of margin due to having to purchase cement from other GB cement producers to cover the requirements of its downstream businesses.
- 8.338 As a result of Tarmac's high degree of vertical integration, and of Tarmac's incentives to sell externally only when the margin is high enough to compensate for having to buy cement from other GB producers for its downstream businesses, we see that:
- (a) If Tarmac increased share compared with the other GB cement producers, it would be difficult to punish due to its low external sales volumes.
 - (b) Tarmac was also unlikely to have had an incentive to undermine the coordination. It would only sell cement when the price is sufficiently high, and it had limited ability significantly to increase sales of cement to external customers because of its high internal requirements and its lack of spare capacity.
- 8.339 On balance, it therefore seems appropriate to consider Tarmac to have been a fringe cement player which lacked both the incentive and the ability to significantly undermine coordination.²⁹³ The evidence from the price announcement letters, as well as the evidence from the analysis of price correlation, confirms that the pricing behaviour of Tarmac was aligned with that of the other cement producers, ie it did not seek to undermine coordination.
- 8.340 It is also important to recognize that the coordination in the GB cement market was reflected in Tarmac's returns (see paragraphs 7.146 to 7.148), despite it not being in the coordinating group of firms.

Role of Aggregate Industries

- 8.341 As set out in paragraph 3.5, Aggregate Industries is the only Major without GB cement production capability. It imports cement from its sister company (Holcim Germany) into GB, and also buys large amounts of cement in GB.

²⁹³ Hanson told us (paragraphs 6.5.14 & 6.5.15 of its [response to provisional findings](#)) that, as shown by switching evidence, Hanson submissions showing [REDACTED] and [REDACTED], Tarmac actively and successfully competed for business, and was a significant constraint on behaviour and pricing. Cemex told us (paragraphs 11.18 & 11.19 of its [response to provisional findings](#)) that Tarmac's presence made coordination very unlikely in the past. Cemex listed several reasons for this, including (a) that Tarmac's different structure gave it different incentives and made it 'something of a maverick' able to undermine any coordination; (b) even if Tarmac only sold small volumes opportunistically when prices were high, we had not explained why other GB producers accepted the loss of this highly profitable volume to Tarmac (which in Cemex's view would only be because other producers could not match Tarmac's prices, as a result of Tunstead's superior efficiency); and (c) internal documents showing that Tarmac was a strong competitor, regularly undercutting the other GB producers. We accept that Tarmac had different structure and incentives from the other GB producers. However, we consider that Tarmac lacked both the incentive and ability to undermine coordination. It had no incentive to undermine coordination, as it had limited external sales of cement, and it profited from a higher price of cement more broadly. It had no ability to undermine coordination as it was producing at full capacity and needed most of its cement for its own downstream RMX operations. In our view, that did not mean that Tarmac did not compete at all—only that, in doing so in the manner in which it did (ie only making external sales when margins available outweighed the cost to Tarmac of having to purchase cement externally for its own downstream operations) it did not undermine coordination. We considered that other producers accept loss of volumes to Tarmac because it is a profit-maximizing strategy for them to do so, ie it is more profitable not to take action that puts higher market prices overall at risk.

- 8.342 We considered the role of Aggregate Industries as an importer of cement, and its ability to constrain prices in GB, in paragraphs 7.118 to 7.121. We found that, although Aggregate Industries was the largest GB importer in terms of volumes of cement imports, Aggregate Industries imported cement predominantly for internal use ([redacted] per cent of imports were used internally). In addition, Aggregate Industries also buys large quantities of cement from the GB producers, predominantly [redacted] since 2009.
- 8.343 Aggregate Industries is therefore in a unique position: it has significant demand for cement [redacted] it has a large import business but [redacted] also [redacted] purchases of cement from the other Majors.
- 8.344 We also reviewed evidence on the prices charged for cement by the other Majors to Aggregate Industries (see paragraph 7.228) and how these compared with the prices to non-Majors, controlling for distance and size of customer. Up until the end of [redacted] Aggregate Industries was buying large quantities of cement from [redacted]. From [redacted] onwards, most purchases by Aggregate Industries were from [redacted]. We therefore focus here on the prices charged by [redacted] and [redacted] to Aggregate Industries. We found that:
- (a) the average price charged to [redacted] until Q1 2009; since Q2 2009 the average price charged by [redacted]; and
 - (b) the average price charged by [redacted] between Q1 2007 and Q4 2011.
- 8.345 This evidence strongly suggests that Aggregate Industries, by virtue of its large purchases and/or of its threat to increase imports into GB, is able to obtain [keen] prices for cement [redacted]. However, Aggregate Industries' external sales of imported cement are very low, which suggests that (as set out in paragraph 7.121) Aggregate Industries' large imports are unlikely to be a constraint on the prices of cement charged by GB producers on customers other than Aggregate Industries.
- 8.346 The fact that Aggregate Industries [redacted] purchases of cement from GB producers is likely to act as a disincentive to Aggregate Industries selling cement to independent customers. This is because the GB cement producers could react to this by increasing the price of cement charged to Aggregate Industries. Our review of Aggregate Industries' internal documents confirmed that Aggregate Industries used its ability to import cement as leverage in negotiations with GB cement producers [redacted].
- 8.347 We also analysed the role of Aggregate Industries at the time of the large internalization of purchases by Hanson in early 2009 (see paragraphs 7.230 to 7.238). Our analysis led us to the view that Aggregate Industries switched its cement purchases to [redacted] at that time because it was in its own interests to do so, and not because of any concerns regarding maintaining stable shares of sales in the cement market.
- 8.348 Overall, the evidence suggests that Aggregate Industries is able to obtain [keen] prices for cement [redacted] because of its large size and because GB cement producers may fear that Aggregate Industries could increase imports to sell to independent customers. However, Aggregate Industries does not constrain GB cement prices to other buyers, because [redacted].²⁹⁴ Although Aggregate Industries may be able to resist large increases in prices for cement as a purchaser, its presence would not appear to

²⁹⁴ [redacted]

prevent Lafarge, Cemex and Hanson coordinating on sales of cement to other GB cement customers.²⁹⁵

Impact of recent market developments

- 8.349 The evidence and analysis in the preceding paragraphs is based on material collected in the course of our two-year inquiry. At the stage of publication of our provisional findings in May 2012, we relied on material up to the end of 2011. In the preparation of this final report, we have taken into account further material covering 2012. The conclusions that we draw from this evidence and analysis are to be found in paragraphs 8.417 to 8.434 below. In the following paragraphs we consider the impact on the GB cement markets of key recent developments in these markets, namely: the acquisition by CRH of various additional import facilities in GB, the formation of Lafarge Tarmac, and, as a consequence of the remedies the CC required for permitting the Lafarge Tarmac JV to proceed, the formation of HCM from assets (including the Hope cement plant) divested by Lafarge and Tarmac.
- 8.350 We considered that these were important factors to take into account to understand if, alone or in combination, they were sufficient to displace our provisional conclusions (inevitably based to a significant degree on the analysis of evidence that predated these developments) on the existence of coordination in the GB cement markets. In addition, we had regard to the formation of HCM and its actual and potential impact in the market in reaching our conclusions on the most appropriate remedial action to address the AECs found (see Section 13). In reaching our final conclusions we had regard to all of the evidence in front of us and sought to place appropriate weight both on the operation of the market over a longer time period, the most recent developments and any immediate and future impact of these developments on the market.

CRH's acquisition of additional GB import facilities

- 8.351 After we published our provisional findings in May 2013, it was announced that, as set out in paragraph 3.79, CRH had purchased five import terminals from Dudman Group, adding to its two existing import terminals in GB.
- 8.352 The GB cement producers told us that, partly through these acquisitions combined with CRH's existing position in the GB cement markets, CRH had become a significant competitor in GB. The GB producers noted that these acquisitions gave CRH national coverage in GB and that CRH had the capacity to produce cement in the Republic of Ireland (and elsewhere). The GB producers also argued that CRH had incentives to produce additional cement in the Republic of Ireland for export to GB to meet its HAL thresholds under the ETS.
- 8.353 We considered the incentives associated with the ETS in paragraphs 7.71 to 7.74, and in Appendix 7.5:

²⁹⁵ Cemex told us in its [response to provisional findings](#) (paragraphs 11.20–11.23) that our argument about Aggregate Industries was inconsistent. Cemex noted that we accepted that Aggregate Industries obtained good prices for the GB cement it purchased and that it could import more cement to sell to external customers. However, Cemex pointed out that we also argued that Aggregate Industries did not sell more imported cement to external customers as Aggregate Industries did not want to face higher prices for the cement it purchased from the GB producers. Cemex noted that, if GB producers could raise the price to Aggregate Industries, they would already have done so, regardless of whether Aggregate Industries increased its sales to independents. Cemex also noted that, in Cemex's view, Aggregate Industries could enter the GB cement market on a larger scale if it chose to do so. According to Cemex, the only reason Aggregate Industries would not do so would be if it were a member of the coordinating group, which Cemex noted we had not found to be the case. However, [REDACTED].

- As set out in Appendix 7.5, it seems plausible that, on the basis of 2012 output, CRH will have an incentive to increase its output in the Republic of Ireland to bridge the gap between its current output and 50 per cent of its HAL thresholds. This would account for around an additional 255 kt of cement relative to its 2012 output.
- However, our analysis of CRH's incentives are based on the price of carbon allowances being sufficient to give CRH the incentive to grow output to the HAL threshold; we assumed a price of £8. This is considerably more than the current price of carbon, around £4.50 per allowance, and so our analysis overstates the case for expansion.
- We also explain in Appendix 7.5 why it is not clear whether CRH would be able to sell all of that additional output in GB given the cost disadvantage we expect it would continue to face compared with GB producers.

8.354 We also noted that CRH told us that CO₂ prices were currently low, and were forecast to remain low, so that it would not make sense to produce additional cement just to meet the HAL thresholds required to obtain the allowances²⁹⁶ and that it had no plans to do so.

8.355 On the basis of CRH's evidence to us and our analysis, we did not think that incentives arising from the ETS were likely to be sufficient materially to transform CRH's competitiveness in the GB cement markets.

8.356 Nevertheless, we consider that the recent acquisitions by CRH have some scope to make CRH a stronger competitor in the GB cement markets. Compared with CPV, the previous owner of Southern Cement, CRH has a greater scale in terms of its overall business and it now has a more widely distributed network of import terminals around GB. Compared with the Dudman Group, CRH has the advantage of having a very strong presence in the production of cement in the Republic of Ireland. However:

- Prior to its acquisition of Southern Cement and the Dudman assets, CRH had [redacted] into GB (see Appendix 3.1), which suggested that CRH's incentives to make additional sales in GB to date had not been particularly strong.
- CRH did not tell us that it had major expansion plans for GB. Rather, CRH told us that it estimated that at their peak under their previous ownerships the three businesses now comprising CRH's current GB business (ie Morrissey, Southern Cement and the Dudman assets—see paragraphs 3.78 and 3.79) would have been importing, in total, around [redacted] tonnes of cement per year, and CRH told us it would be disappointed if its GB business did not ultimately reach at least this level.²⁹⁷
- We were also mindful of the risk that CRH's multi-market contact with GB producers might lessen its appetite to compete aggressively in GB. CRH and GB producers—or their parent companies—have a presence across a number of European markets.²⁹⁸ In particular, there was specific evidence of a GB producer viewing its position in the Irish cement market as 'a mechanism to control the likes

²⁹⁶ Summary of response hearing with CRH held on 26 June 2013, paragraph 9.

²⁹⁷ *ibid.*, paragraph 6.

²⁹⁸ For example, based on information from both companies' websites, Lafarge Tarmac and CRH both have operations in the following European countries: UK, Republic of Ireland, France, Germany, Austria, Belgium, Spain, Czech Republic, Hungary, Romania, Switzerland, Poland, Russia, Slovakia and Ukraine.

of ... [CRH] from taking a more aggressive stance in the GB market.²⁹⁹ Although the internal document concerned dated back to 2008, the author of the document remains in a senior commercial position in the [X] GB producer's Irish operations.

8.357 For the reasons set out in paragraphs 8.353 to 8.356, we did not consider that CRH's recent acquisitions, taken alone or in conjunction with other recent market developments, were sufficient materially to reduce our concerns about coordination in the GB cement markets.

Formation of Lafarge Tarmac JV

8.358 In our provisional findings, we said that we expected Lafarge Tarmac to follow broadly similar competitive strategies in cement to those pursued by Lafarge prior to 2013, at least in terms of all the key factors that contribute to the mechanism of coordination we have described. Parties' comments in response to our provisional findings on this point are set out in Appendix 7.15.

8.359 Further to those responses, Lafarge Tarmac submitted a brief document setting out its commercial strategy. This reiterated the point that Lafarge Tarmac considered that it had a senior management team that was fundamentally different from either of the legacy Lafarge or Tarmac businesses. The document highlighted Lafarge Tarmac's strategy to achieve the synergies of the Lafarge and Tarmac integration including through exploiting Lafarge Tarmac's network of cement, lime and PFA operations; it identified £[X] million of recurring annual synergies to be achieved after three years as being attributable to the cement and lime business.³⁰⁰ Lafarge Tarmac told us that it had also created a central marketing and central logistics functions to take an integrated approach across product lines.³⁰¹ It also noted Lafarge Tarmac's drive to provide innovative products in cement (eg developing biodegradable plastic and paper bags), in RMX (eg developing VAPs) and in lime. The document further highlighted Lafarge Tarmac's focus on sustainability, which, in relation to cement, includes providing blended cement incorporating GGBS, PFA and limestone as zero carbon additions rather than a standard CEM I cement with high levels of clinker. In its response to our provisional findings, Lafarge Tarmac told us that through its increased focus on VAPs, it had different incentives to other cement and independent RMX producers.³⁰²

8.360 We have considered the responses to our provisional findings and further evidence from Lafarge Tarmac and other parties on these points.

8.361 We noted that, as set out in paragraphs 3.5 to 3.7 of the CC's final report in its Anglo-Lafarge JV inquiry, prior to the JV, Anglo American's strategy to dispose of its non-core international Tarmac Group businesses was well documented in both its market announcements and internal documents. Lafarge and Anglo American stated that [X]. This suggested to us that Lafarge was likely to be the driving force behind Lafarge Tarmac's medium- to long-term strategy.

²⁹⁹ In his letter to [X] dated 25/8/08, [X] (Commercial Manager, Lafarge Cement Ireland) expresses grave concerns about Lafarge's plan to increase its cement prices in Ireland and he writes:

Lafarge Cement Ireland in my mind is a mechanism to control the likes of [X] and [X] from taking a more aggressive stance in the GB market, but to make sense we need to be in a position to show that we are not a weak and defenceless company and to do that we need to be able to attack [X] and [X] and force them to take actions (increase prices) that will improve our competitiveness through better returns. Developing a market in the Republic of Ireland attacking [X] where they feel comfortable is a means of making [X] understand that Lafarge is a global company much bigger than them and huge in comparison to [X].

³⁰⁰ *ibid*, paragraphs 5 & 6.

³⁰¹ *ibid*, paragraphs 9–11.

³⁰² [Lafarge Tarmac response to provisional findings and Remedies Notice](#), paragraphs 149.

- 8.362 We understand that Lafarge Tarmac has a new senior management team. However, we also noted that key Lafarge personnel, many of whom were involved in the Lafarge email correspondence analysed in paragraphs 8.61 to 8.201 were appointed to similar key positions in Lafarge Tarmac, which was one factor that suggested to us that Lafarge Tarmac's commercial thinking was likely to continue along similar lines to that of Lafarge.
- 8.363 Some elements of Lafarge Tarmac's strategy would appear to be sound business practice (eg reducing its carbon footprint, investing in R&D, developing VAPs) and it is not clear how this would differentiate it from Lafarge. Lafarge already had a strategy prior to the JV of minimizing carbon emissions, developing differentiated VAPs and carrying out R&D. In these areas, it would seem that Lafarge Tarmac's strategy is to progress along similar lines to those that Lafarge would have followed absent the JV.
- 8.364 The inclusion of lime products in Lafarge Tarmac's product portfolio marks a departure from Lafarge's position. However, we have seen no evidence that the supply of lime is involved in the coordination we identified and therefore this difference between Lafarge Tarmac and Lafarge would seem unlikely to contribute to destabilizing coordination.
- 8.365 We acknowledged that the proposed restructuring of Lafarge Tarmac (eg the creation of centralized marketing or logistics functions) and, more generally, the potential synergies from the JV, could contribute to Lafarge Tarmac achieving lower production and distribution costs. We did not consider that those savings would be likely materially to alter Lafarge Tarmac's stance in the market, for example by driving Lafarge Tarmac to exploit its lower costs to pursue a more aggressive policy to gain sales. We note that there have been significant changes in Lafarge's efficiency in the past (for example, following the closure of Lafarge's Northfleet and Westbury plants) without this having triggered a departure from the coordinated behaviour that we have found.
- 8.366 Lafarge Tarmac's proposed acquisition of Tarmac Building Products³⁰³ (TBP—see paragraph 3.45) has recently come to our attention. We noted that this was a proposed acquisition only, and was still subject to regulatory approval. If this transaction were to take place, we estimated that Lafarge Tarmac's internal sales of cement would be likely to increase by around [X] kt, thereby increasing the extent of its vertical integration, although Lafarge Tarmac would still be less vertically integrated than Cemex and Hanson.
- 8.367 Our view remains that we expect Lafarge Tarmac to follow broadly similar competitive strategies in cement to those pursued by Lafarge prior to 2013, at least in terms of all the key factors that contribute to the mechanism of coordination we have described.

Creation of HCM

- 8.368 We noted that HCM will be quite similar to Tarmac prior to January 2013, in terms of having a single cement plant, and in terms of its market position in cement and RMX, but will have some additional cement capacity (around [X] Mt) and a significantly

³⁰³ TBP produces concrete blocks, bagged aggregates and foundry sands. It was separated from Tarmac Ltd in 2010 and has operated independently since that time. It was not contributed to the Anglo-Lafarge JV that resulted in the formation of Lafarge Tarmac.

smaller aggregates business.³⁰⁴ In our provisional findings, we considered three possible scenarios for HCM's longer-term behaviour as part of our competitive assessment of the GB cement markets:

- (a) HCM might behave similarly to Tarmac prior to January 2013 but with additional cement capacity. As described in paragraphs 8.336 to 8.340, we found Tarmac to be outside the coordinating group, but lacking both the incentive and ability significantly to undermine coordination, and indeed benefiting from it. Under this scenario HCM might seek to sell out its cement capacity, through both internal and external sales, but would act essentially as a taker of cement prices that were largely determined by the actions of the other three GB cement providers. Whilst HCM would act independently of the other three GB cement producers under this scenario, this might not be sufficient to undermine coordination by the other GB cement producers, given the fact that HCM operates a single, fixed capacity plant. Under this scenario, our concerns about coordination would be unlikely to be reduced to any great degree.
- (b) HCM might pursue a more proactive competitive strategy than Tarmac did prior to 2013. This might involve, for example, vigorous price competition, widespread attempts to encourage customer switching and/or investment in new capacity. Such behaviour by HCM would not necessarily be sufficient to undermine coordination, as this would depend on the extent to which HCM's actions were capable of disrupting existing patterns of behaviour given the scale and nature of its operations (see further below).
- (c) The cement market might become subject to some form of coordination involving HCM and other GB cement producers. This might involve HCM developing a shared understanding with other GB cement producers about their likely behaviour and might result in HCM producing at less than its available capacity. While we do not regard this as the most likely scenario, were it to eventuate, this would in no way reduce our concerns about coordination, and indeed could increase them. For these reasons, we do not consider it further here, where our focus is on whether recent market developments allay our concerns over coordination.

- *Parties' comments on the impact of HCM*

8.369 In their responses to the provisional findings several parties commented on the impact of HCM on the GB cement market. These responses are set out in detail in Appendix 7.15, and are not reproduced here. However, those arguments can be grouped under four principal headings, as follows:

- The argument that HCM was created at the time of the JV with a view, in part, to address concerns the CC had at that time about coordinated behaviour in the cement market.
- The argument that HCM's management team, and HCM's backing from MI, suggest that HCM will be a very active market player.

³⁰⁴ Hanson (see Appendix 7.15) and Cemex (in paragraphs 18.11 & 18.12 of its response to provisional findings) argued that we should take into account the treatment of new entry in the CC's Movies on Pay TV market investigation in our consideration of the impact of the creation of HCM on the GB cement markets. However, the new entry in Movies on Pay TV consisted of additional market participants over and above the existing ones. In the GB cement markets, the entry of HCM using pre-existing cement production capacity occurred in parallel with the exit of Tarmac as an independent competitor (via the formation of the Lafarge Tarmac JV), resulting in neither a change to the number of GB cement producers nor a change in total GB cement production capacity. We therefore did not think that the CC's treatment of new entry in the Movies on Pay TV market investigation was a strong precedent for our consideration of the impact of the creation of HCM.

- The argument that HCM is structurally different to Tarmac prior to 2013, will have the incentive not to align itself with any coordinated behaviour and the ability to disrupt any existing coordinated behaviour.
- The argument that HCM's behaviour since its formation is evidence of its intention to compete aggressively in the market, winning volumes and resulting in downward pressure on prices.

8.370 We deal successively below with each of these arguments.

- *The argument that the formation of HCM has already addressed CC concerns over coordinated behaviour.*
 - *The views of the parties*

8.371 This point was most fully argued by Hanson. Hanson submitted that, at the time of the CC's merger inquiry into the Lafarge Tarmac JV, the CC's decision to require the divestment that gave rise to HCM was based on considerations that went beyond restricting the lessening of competition in the market. Hanson submitted that the purpose of that divestment was also to counter the coordination that Hanson said the CC had concluded at the time of JV inquiry was present in the GB cement market.³⁰⁵ Hanson told us that to maximize the effects of the remedy, the CC had deliberately established a business that was structurally different from Tarmac, with a much larger cement capacity allowing for far greater surplus in cement, in order to maximize competition in the market and also maximize constraints on pricing.³⁰⁶

- *Our views*

8.372 We do not agree with the proposition that the creation of HCM as part of the remedies required by the CC following its inquiry into the Anglo–Lafarge JV was designed to resolve concerns the CC had at that time about coordinated behaviour in the cement market. Rather, that remedy was intended to address the CC's finding that the Anglo–Lafarge JV was likely to *increase* the susceptibility of the market to coordinated behaviour, whether or not coordination was actually taking place (a question on which the CC came to no view in its report on the Anglo–Lafarge JV). That is to say, the remedy addressed the CC's concern that the Anglo–Lafarge JV would result in an SLC as a result of coordinated effects, absent the remedy. Paragraph 68 of the summary of the CC's report on the Anglo–Lafarge JV states:

After careful consideration, we concluded that this proposed divestiture was of sufficient scale and scope to effectively restore the essential characteristics of the market structure before the proposed JV for both cement and RMX. As a consequence, and having considered the impact on the three conditions for coordination, we concluded that allowing the proposed JV to proceed subject to the proposed divestiture would be unlikely to result in a material change in the susceptibility of the UK bulk cement market to coordination relative to the counterfactual. Subject to some necessary safeguards regarding implementation, we further concluded that the risks associated with the proposed divestiture were also acceptable. Consequently, we decided that the proposed divestiture would be an effective remedy to the SLC

³⁰⁵ [Hanson response to provisional findings](#), paragraphs 19.4 & 19.5.

³⁰⁶ *ibid*, paragraph 19.6.

that we found to arise in the market for the supply of bulk cement in the UK, as a result of coordinated effects.

8.373 This passage shows that it was clearly not the CC's view then that the creation of HCM addressed concerns about the susceptibility of the GB cement markets to coordination. The terms of reference for that inquiry were specifically limited to assessing whether the Anglo–Lafarge JV would give rise to an SLC and the remedy was directed solely at addressing the SLC that would have resulted from the JV had it gone ahead in its original form.

8.374 It is also not the case that, at the time of considering the remedies to the SLC associated with the Anglo–Lafarge JV, the CC deliberately established a business that was structured differently from Tarmac. HCM is different from Tarmac because that was the package of assets offered by Anglo American and Lafarge and which the CC judged would be effective to address the SLC the CC had identified. Anglo American and Lafarge told the CC that other potential divestiture packages which might also have been effective would have resulted in greater foregone efficiencies, and that this was therefore its preferred solution. As a matter of proportionality, given its finding that divestiture of the HCM package would be an effective remedy, the CC therefore required the divestiture of the HCM package rather than a different package or prohibiting the JV altogether.

- *The argument that the HCM management team and MI backing suggest HCM will be an active competitor*

- *The views of the parties*

8.375 Hanson told us that we had not taken adequate notice of HCM's management team, group structure and corporate culture which, Hanson submitted, strongly suggested that HCM would be a very active market player.³⁰⁷ In this context, Hanson noted that the appointments for Chairman of the board and of a management team constituted by former executives of Lafarge, Anglo American and Tarmac strongly suggested that HCM sought to maximize profits and market presence.³⁰⁸ Hanson also noted that HCM could draw on the expertise and resources of Lakshmi Mittal and MI, which had experience of carrying out business turnarounds, creating highly efficient market players. Hanson also put to us that HCM could draw on the financial resources of its parent group to produce clinker overseas and could access ArcelorMittal's network of steel plants in Europe with a view to importing GBS for grinding into GGBS at HCM's mill.³⁰⁹ Hanson included in its response two public statements made by HCM's public leadership about their intention to make a major impact on the market, and it noted that in the *Airtours* decision, the European Court of First Instance had relied on the fact that 'operators made it clear that they intend to increase their market share'.³¹⁰ Hanson also noted that HCM had already enhanced Hope's pre-existing workforce and increased its number of employees in the business by 33 per cent.³¹¹

- *Our views*

8.376 We see no reason to consider that HCM will be any more driven to maximize profits than Tarmac was, nor do we consider that HCM is different in having access to

³⁰⁷ *ibid*, paragraph 19.24.

³⁰⁸ *ibid*, paragraph 19.24.

³⁰⁹ *ibid*, paragraph 19.26.

³¹⁰ *ibid*, paragraph 19.28.

³¹¹ *ibid*, paragraph 19.30.

expertise and resources (financial and otherwise) of a larger parent and sister companies. Tarmac was part of the Anglo American group and also had access to group-wide resources and expertise. In relation to the argument made by the parties that HCM could access ArcelorMittal's network of steel plants in Europe with a view to importing GBS for grinding into GGBS, we noted that MI told us that it 'did not find it difficult to source GGBS outside of Great Britain although it was no different in economic terms from purchasing GGBS within Great Britain. Ultimately, [MI] considered that it was preferable to use PFA which was more economical'.

- *The argument that HCM is structurally different from Tarmac*
 - *The views of the parties*

8.377 A number of parties emphasized the structural differences between HCM and Tarmac.

8.378 Hanson told us that we had not analysed the potential for HCM to act as a maverick, having different incentives from the coordinating group and taking significant market share from it.³¹² Hanson noted that HCM had enough capacity to take 16 per cent of the market, compared with Tarmac's 10 per cent, and that, because it was less vertically integrated downstream than Tarmac, a greater share of its production was available to external customers.³¹³ Hanson put to us that because of its different customer base, HCM had a competitive advantage over the other majors; it had the ability to be flexible on pricing and to be aggressive in targeting competitors' clients.³¹⁴

8.379 Hanson noted that in the CC's decision on the JV, the CC acknowledged that there was scope for the acquirer of the divested assets to increase the uncertainty in the market for any cement producers seeking to achieve a coordinated outcome. Hanson noted that the CC identified two main reasons for this: (a) that Hope had never been operated as a stand-alone basis and any purchaser would not have a record of operating a similar plant within the UK, and that the extent of such uncertainty may be affected by the identity of the acquirer; and (b) that the acquirer of the divested business would operate a larger cement plant than Tarmac had done until then.³¹⁵

8.380 Hanson gave as an example of the different behaviour between HCM and Tarmac the fact that [X].³¹⁶

8.381 Lafarge Tarmac echoed some of the points made by Hanson: that HCM has greater capacity than Tarmac did and that it would have more cement available to supply external customers than Tarmac, so that its long-term incentives are fundamentally different to those of Tarmac pre-2013.³¹⁷ Lafarge Tarmac concluded that we should therefore rule out the possibility that HCM behaved like Tarmac pre-2013, the first scenario described in paragraph 8.368.

8.382 In its response, Cemex also noted that HCM had greater capacity and that it would be able to offer greater volumes to the external market than Tarmac pre-2013.³¹⁸

³¹² *ibid*, paragraphs 19.2–19.6.

³¹³ *ibid*, paragraphs 19.4.&19.5.

³¹⁴ *ibid*, paragraphs 19.4 & 19.5.

³¹⁵ *ibid*, paragraph 19.23.

³¹⁶ *ibid*, paragraph 19.22.

³¹⁷ [Lafarge Tarmac response to provisional findings](#), paragraph 164.

³¹⁸ [Cemex response to provisional findings](#), paragraph 17.5.

Cemex submitted that this provided HCM with the ability both to resist and constrain coordination in a way that Tarmac was historically unable to do.³¹⁹

8.383 Cemex also submitted that because HCM was a single plant operator it had further incentives to operate at full capacity, with no cross-plant utilization considerations to take into account. Cemex considered it implausible that HCM would seek to operate only one of the two kilns at the Hope plant.³²⁰ Further, Cemex noted that the Hope cement plant was one of the GB plants with the lowest unit costs of production, and that having three rail-linked depots contributed to it having reduced distribution costs. Cemex submitted that this further increased the incentives for HCM to run Hope close to capacity. Cemex suggested that because of this, HCM's share of production was likely to exceed its share of capacity of 16 per cent.

8.384 Cemex pointed to the fact that HCM was a new player in the cement market, with no existing customer or commercial relationships, which would make it unlikely that HCM would enter into, understand the terms of, or maintain any tacit understanding with GB cement producers immediately.³²¹

8.385 Cemex submitted that HCM would have a wider impact on cement prices as a supplier losing volumes of cement to HCM in one area will have the incentive to regain those volumes elsewhere, targeting the customers of other suppliers.³²² Cemex further argued that HCM's increased external sales of cement gave cement customers more buyer power, by giving more of them an additional outside option compared with when Tarmac made limited external sales.³²³

8.386 Cemex also told us that HCM's RMX capabilities 'provide it with the rare ability for a member of a so called 'fringe' to effectively foreclose a portion of the downstream market from its upstream rivals'.³²⁴

- *Our views*

8.387 The entry of HCM in January 2013 using pre-existing cement production capacity occurred in parallel with the exit of Tarmac as an independent competitor (via the formation of the Lafarge Tarmac JV), resulting in no change to (a) the number of participants in the GB cement markets; (b) the number of GB cement producers; or (c) total GB cement production capacity. We also note that HCM has a broadly similar position in RMX to Tarmac prior to 2013 in terms of the size of its RMX business, so that the size of the RMX market that HCM can self-supply (see Cemex's argument about 'effective foreclosure' in paragraph 8.386) is similar in scale to that of Tarmac.

8.388 HCM's pre-acquisition business plan [REDACTED]. Whilst there is some mention in that business plan [REDACTED] or would have little absolute impact on HCM's cement capacity (eg increasing volumes of cement produced via more blending to make CEM III or CEM IV).

8.389 We agree that HCM has greater cement capacity than Tarmac did prior to 2013, around [REDACTED] compared with [REDACTED]. We also agree that, because it is less vertically integrated than Tarmac, HCM has more cement available for external customers

³¹⁹ *ibid*, paragraph 19.6.

³²⁰ *ibid*, paragraph 17.7.

³²¹ [Cemex response to provisional findings](#), paragraph 17.15.

³²² *ibid*, paragraph 17.12.

³²³ *ibid*, paragraphs 19.7 & 19.8.

³²⁴ [Cemex response to provisional findings](#), paragraph 2.39.

than Tarmac did. We estimate that, in a steady state, HCM will be around [redacted] 'long' in cement, [redacted] more than was the case for Tarmac, the precise figure depending on the extent to which [redacted].³²⁵ In the period to August 2015, the volume available for HCM to supply external customers will be less than this as HCM has an agreement to [redacted]. But overall, we considered that it was correct that HCM would have more cement available for external sales than Tarmac did, and that it was not therefore a simple case of Tarmac having been 'swapped' for HCM in the GB cement markets.

- 8.390 We do not agree with Hanson's comment that, because of its 'long' position in cement, HCM would have a great competitive advantage over the other Majors, which Hanson argued would be because it could be very flexible on price and aggressively target competitors' clients (see paragraph 8.378). It is not clear to us why HCM would be able to adopt this strategy any more than Lafarge Tarmac, Cemex or Hanson, which also have 'long' positions in cement (see Appendix 2.3, Tables 1 and 2). Nor did we agree with Cemex's argument that, because of HCM's increased external sales compared with Tarmac, customers would have significantly increased buyer power. The scope for any increase in buyer power to benefit customers would be constrained by HCM's fixed capacity, and would be further limited if Cemex, Hanson and Lafarge Tarmac continue to coordinate and if HCM were to act as a price taker (see the first scenario in paragraph 8.368).
- 8.391 We note that the Hope plant is among those with the lowest unit production costs, and that its rail-connected depots contribute to relatively low distribution costs. We recognize that this will enable HCM to compete for volumes, but only up to its cement capacity. We consider that one strategy it could pursue would be to set its prices just under those of the other GB producers. Such behaviour would not imply that HCM had become part of the coordinating group, only that (like Tarmac) it was benefiting from the coordination of the other three GB producers. This is the first scenario envisaged in paragraph 8.368, under which our concerns about coordination would be unlikely to reduce materially.
- 8.392 Given that HCM would have about [redacted] more cement than Tarmac did to sell to external customers, we considered that HCM would have fewer of the characteristics of a typical fringe player (such as substantially different strategies and incentives from other market participants) than Tarmac did. Further, we do not expect that HCM having an additional [redacted] of cement compared with Tarmac to sell to external customers would be sufficient to disrupt coordination, given the wider structure of the market and the incentives of the other GB cement producers. Over the period from 2007 to 2011 we have observed other similar or more significant changes to the market which did not appear to disrupt coordination materially, for example the 36 per cent decline in cement sales in GB over the period 2007 to 2009 and the internalization of most of Hanson's considerable cement purchases from Lafarge in early 2009 (about [redacted] of the [redacted] of cement that Hanson purchased from Lafarge in 2008).
- 8.393 We concluded that, although there are some differences between HCM and Tarmac, and although the future behaviour of HCM is uncertain, the entry of HCM, which occurred in parallel with the exit of Tarmac as an independent competitor via the formation of the Lafarge Tarmac JV, had not changed substantially the structure of the GB cement markets.

³²⁵ MI told us that [redacted] produced was for internal use. The Hope plant's cement capacity is around [redacted]. Tarmac told us that during FY12, Tarmac sold around [redacted] of cement externally.

- *The argument that there is evidence of HCM behaving aggressively in the market*
- *The views of the parties*

8.394 A number of parties made representations to us concerning HCM's performance and actions in the GB cement markets during 2013 to date.

8.395 We obtained figures and commentary from MI on HCM's performance as at the end of June 2013 and as at the end of October 2013, and MI also updated us on HCM's short-, medium- and long-term strategy goals. Further details of this evidence from MI is set out in Appendix 7.15. Overall, MI told us that [REDACTED].³²⁶

8.396 Lafarge Tarmac told us that in the period from January to May 2013, it had lost [REDACTED] kt of bulk independent customers, and that in the period from January to November 2013, it had lost [REDACTED] kt of bulk independent customers, compared with [REDACTED] kt for the whole of 2011 (and [REDACTED] kt for the whole of 2012). Lafarge Tarmac told us that [REDACTED] per cent of the losses to May 2013, and [REDACTED] per cent of the losses to November 2013, were to HCM.³²⁷

8.397 Hanson told us that [REDACTED].³²⁸

8.398 Cemex noted that between January and July 2013, HCM accounted for [REDACTED] per cent of bulk independent volume lost by Cemex to competing suppliers; in contrast, in the years from 2009 to 2012, Tarmac never accounted for more than [REDACTED] per cent of its losses of bulk independent volume.

8.399 [REDACTED]

8.400 [REDACTED], an independent RMX producer, provided evidence of its recent negotiations to purchase cement, which it said demonstrated increased competition as a result of HCM activity in the market. [REDACTED] told us that it had previously sourced its CEM I from [REDACTED] at £[REDACTED] a tonne. According to [REDACTED], in September 2012, [REDACTED] and [REDACTED] both approached it with unusually good prices (£[REDACTED] and £[REDACTED] a tonne respectively). [REDACTED] noted that [REDACTED] was typically not near the best rates. In March 2013, [REDACTED] quoted [REDACTED] £[REDACTED] a tonne. In May 2013 and following negotiations, [REDACTED] reduced its price to £[REDACTED] a tonne.

8.401 Other parties also submitted that the entry of HCM had put pressure on their pricing:

- Lafarge Tarmac submitted evidence on the price reduction it offered bulk independent customers in 2013 in order to retain them following their threats to switch to HCM. According to Lafarge Tarmac, the simple average price reduction was £[REDACTED] per tonne, over affected volumes of [REDACTED] kt from January to April 2013 (the weighted average reduction was £[REDACTED]).³²⁹
- Lafarge Tarmac told us that its price of bulk CEM I cement sold to independents had declined by £[REDACTED] per tonne in nominal terms in 2013 (year to October) compared with 2012.³³⁰

³²⁶ [MI summary of response hearing held on 24 June 2013](#), paragraph 7.

³²⁷ [Lafarge Tarmac response to provisional findings](#), paragraph 179.

³²⁸ [Hanson response to provisional findings](#), paragraph 19.21.

³²⁹ [Lafarge Tarmac response to provisional findings](#), paragraph 179 and Annex 3.

³³⁰ Lafarge Tarmac told us that this was a significant fall and was greater than the CC's estimated 'excess' industry profit per tonne (see Appendix 8.6). However, as set out in paragraph 8.404, we did not consider that the evidence on HCM's pricing thus far reflected the likely longer-term position of the GB cement markets, nor of HCM's longer-term impact on that market.

- Cemex told [REDACTED].³³¹ Cemex submitted that this was evidence of HCM's intention to operate as a 'price maker' and not as a 'price taker' in the market.³³²

- *Our views*

8.402 We considered the evidence of losses to HCM by the Top 3 GB producers [REDACTED] in 2013, and of HCM's current pricing behaviour to be unsurprising. We interpret this as evidence of HCM working to establish a market position, having had very few external cement customers at its formation. Further, some initial losses by Lafarge Tarmac may relate to those customers who had purchased cement from the Hope plant prior to the JV who may wish to continue to purchase cement from this plant, given, for example, the particular properties of Hope cement and/or customers' proximity to the Hope plant.

8.403 We were not, however, persuaded that this would be likely fatally to undermine the patterns of coordination that had proved durable and resilient in the past. We noted that in a similar fashion, as set out in paragraph 8.299, following Hanson's large internalization of cement purchases from Lafarge in 2009 (which triggered re-balancing action by Lafarge in terms of recouping market share from Hanson), there were unusual levels of competitive activity in the cement market for a period (shown both by the unusual amount of switching at the time and the fact that prices somewhat reduced after Q1 2009), although the evidence did not indicate that coordination ceased during this period. Further, afterwards, the market appeared to stabilize once more (see, for example, the evidence on market shares in paragraph 7.11 and on switching in paragraph 7.179).

8.404 We therefore did not consider that the evidence on losses to HCM and HCM's pricing thus far reflected the likely longer-term position of the GB cement markets, nor of HCM's longer-term impact on that market.

- *Conclusion on creation of HCM*

8.405 As noted in paragraph 8.368, there are various possible scenarios for HCM's longer-term behaviour. It is not possible given the statutory timescales for our investigation to say which of these scenarios will ultimately prevail.³³³ Nevertheless, our approach has been (as set out in paragraph 8.350) to assess whether the formation of HCM (and other recent market developments) are sufficient to displace our provisional conclusions on the existence of coordination in the GB cement markets. This exercise necessarily is predictive as, given the statutory timescales for our investigation, we cannot wait for events to unfold.

8.406 As discussed in the preceding paragraphs, and while HCM has only recently entered the market, we found that:

- It would be entirely consistent with the incentives facing HCM for it to adopt a position whereby (as we found Tarmac to have done in the past) HCM was outside the coordinating group, but did not seek to undermine (and continued to

³³¹ [Cemex response to provisional findings](#), paragraph 17.12.

³³² *ibid*, paragraph 17.12.

³³³ Hanson told us in paragraph 6.5.22 that, whilst we said that it was unlikely to be possible to predict the full implications of the entry of HCM and formation of the Anglo-Lafarge JV with certainty, we also alleged that the Majors were able to coordinate their strategies through predicting each other's responses. However, we consider that there is a difference between being able to predict the full impact of HCM and the Anglo-Lafarge JV and members of the coordinating group being able sufficiently to predict each other's likely responses to competition to allow coordination to take place (which we consider in terms of market transparency—see, for example, paragraph 8.162—and other features of the market).

benefit from) coordination (this is the first scenario set out in paragraph 8.368). Under such an outcome, our concerns about coordination would be unlikely to be reduced to any great degree.

- Even if HCM pursued a more competitive strategy, the principal change in market structure following the formation of HCM (and the simultaneous exit of Tarmac as an independent competitor) is that HCM has some [X] more cement to sell externally than did Tarmac. We are not satisfied this would be sufficient permanently to disrupt a pattern of coordination that has proved durable and resilient in the face of structural changes of similar or greater significance in the past.
- We are not persuaded that the evidence on losses to HCM and HCM's pricing thus far reflects the likely longer-term position of the GB cement markets, nor of HCM's longer-term impact on those markets. Rather we consider this evidence to be consistent with a temporary disturbance as HCM finds a place in those markets and the markets adjust accordingly.

8.407 Overall, we did not consider that the movement of about 5 per cent of GB production share (see Tables 7.15 and 7.16) in January 2013 from a fringe player (Tarmac) to a new entrant with somewhat less predictable future behaviour (HCM), with no broader change in the structure of the GB cement markets, was likely (either alone or in conjunction with other market developments) to undermine coordination in the GB cement markets.

Effects of coordination on competition

8.408 The mechanism for coordination in paragraph 8.289 describes Cemex, Hanson and Lafarge limiting competition between them, as a result of the recognition of their mutual interdependence, by taking steps to reduce any incentives to increase volumes and shares of sales. Such coordination is likely to dampen any price competition between them and therefore result in higher average prices for cement than if they actively sought to increase their shares of sales.

8.409 We considered the effect of any such coordination on the difference in cement prices faced by Major and non-Major cement customers. There is no evidence to suggest that non-Major cement customers pay more for cement than the Majors do. Rather, the evidence suggests that Majors tend to charge higher prices to each other than they do to non-Major customers on average (see paragraph 7.228). There is also no evidence to suggest that GB cement producers favour their own downstream operations by charging lower prices on internal sales (see Appendix 6.5).

8.410 Therefore, we do not think that the outcome of coordination in the GB cement markets is to increase the prices paid by non-Major customers relative to prices paid by the downstream operations of the Majors. Rather, Lafarge, Cemex and Hanson are seeking to maintain rather than increase their pre-existing shares of sales (see paragraph 8.289) which reduces—but does not necessarily eliminate (see paragraph 8.228)—competition between them to supply individual customers. In addition, Tarmac's pricing behaviour was aligned with that of Lafarge, Cemex and Hanson (see paragraph 8.339)³³⁴ and cement importers have incentives to price their cement just below the price of GB-produced cement (see paragraph 7.123). We therefore think that the likely effect of coordination is to raise the average price of cement for all

³³⁴ We set out our analysis of the impact of market developments since early 2013 (including the formation of the Lafarge Tarmac JV and the entry of HCM) in paragraphs 8.349–8.407.

GB cement users—regardless of which supplier this cement is purchased from and regardless of whether this cement is ultimately sold through non-Major RMX producers (where it is likely to result in higher average prices for RMX), non-Major concrete product producers, independent merchants or through the downstream businesses of the Majors.³³⁵ As set out in paragraph 8.286, only a modest proportion of total cement sales may be (to an extent) protected from the effects of coordination by buyer power.

8.411 Lafarge Tarmac told us, in its response to our provisional findings, that the sale of bulk cement to independent RMX producers was the principal segment of interest for the CC, but that it was not clear whether such producers needed any assistance from the CC, as their share had grown substantially vis-à-vis RMX sites owned by the Majors, despite the recession.³³⁶ We do not agree with Lafarge Tarmac that our principal area of concern was the sale of bulk cement to independent RMX producers: as set out in paragraph 8.410, we consider that the likely effect of coordination is to raise the average price of cement for all GB cement users—regardless of which supplier this cement is purchased from and regardless of whether this cement is ultimately sold through non-Major RMX producers (where it is likely to result in higher average prices for RMX), non-Major concrete product producers, independent merchants or through the downstream businesses of the Majors. Whilst growth of independent RMX producers is a factor we took into account in assessing whether there has been foreclosure (see Section 10), it is not inconsistent with coordination on all cement sales.

Quantification of the detriment arising from high cement prices

8.412 We consider there to be a material customer detriment arising from coordination in cement, and the resulting high cement prices.³³⁷ In Appendix 8.6, we set out in detail how we estimated the detriment associated with high cement prices using two different approaches. One approach was based on industry profitability (the ‘profitability-based approach’)³³⁸ and the other approach was based on comparing average cement prices with a benchmark price that would prevail in a well-functioning market (the ‘cost-based approach’).

³³⁵ We did not receive many submissions from bulk or bagged cement customers complaining about cement prices or other aspects of the supply of cement—although there were a small number. We considered that there were likely to be several reasons for this relative lack of customer concern. First, we found some evidence of large customers obtaining particularly favourable terms for cement supplies (see paragraph 8.284). Second, we found that customers were (in the case of bulk cement) downstream firms using cement as an input to their own products (RMX, mortar, concrete products etc) or (in the case of bagged cement) builders’ merchants or retailers, selling cement on to end-users. Such firms were likely in our view to be more concerned about the relative price they paid for cement (ie that the price they paid was not substantially different from the price paid by their competitors in their downstream markets) than the absolute price (within limits) they paid. If the effect of coordination is to raise cement prices to all GB users of cement, this would generate fewer customer concerns about apparently unfair relative prices—and customers would not be able to compare the prices they were paying with the prices that would prevail in a competitive market. Lafarge Tarmac, [in response to provisional findings](#) (paragraph 95), told us that it was implausible that an RMX purchaser, concrete block manufacturer or builders’ merchant would know the prices paid by rivals. We thought that, although purchasers of cement would not know the precise prices of cement paid by competitors, they would find out, through downstream competition, whether the prices they were obtaining enabled them to be competitive and so would be aware in broad terms whether rivals were, in relative terms, securing a better price for their inputs.

³³⁶ [Lafarge Tarmac response to provisional findings](#), paragraph 96.

³³⁷ We also consider that there is a material customer detriment in the GB cement markets arising from the features of the GB cement markets that we identify in paragraph 8.485 and that give rise to a separate AEC in the GB cement markets (and a separate AEC in the GGBS market). The estimates of the detriment we present in the following paragraphs cover the detriment arising from high cement prices as a result of both the coordination AEC in the GB cement markets and the AEC in the GB cement markets arising from the arrangements for the production of GBS and GGBS. We estimate the detriment arising from high GGBS prices as a result of the AEC in the GGBS market in paragraphs 8.490–8.492.

³³⁸ See the Guidelines, [paragraph 103](#).

Profitability-based approach

- 8.413 Using industry profitability information to estimate the customer detriment relies on the observation that the return on capital³³⁹ less firms' cost of capital³⁴⁰ is a measure of returns in excess of what would be expected given the risk taken. To arrive at an estimate of detriment, we multiplied this measure of excess returns by the industry's total net assets.³⁴¹
- 8.414 Table 1 in Appendix 8.6 shows our estimates of detriment using a profitability approach. We estimate the detriment to be about £30 million a year on average over 2007 to 2012, the entire period for which we had data.³⁴² However, we considered that this figure would underestimate the scale and significance of customer detriment in the future because (a) our analysis covered a period which included an exceptional downturn in demand (so includes the short-term impact on profitability arising from the cement producers' adjustment to this reduced demand) and, linked to this, (b) our analysis did not cover at least a complete business cycle. If a profitability approach is adopted for estimating customer detriment, then our profitability analysis indicates that customer detriment has been increasing on average in recent years. In particular, whilst annual detriment was minimal on average over the 2007 to 2009 period, our profitability-based estimate of the detriment increases to £58 million a year on average for the 2010 to 2012 period, as shown in Table 1 in Appendix 8.6.

Cost-based approach

- 8.415 As set out in Appendix 8.6, using the cost-based approach, we estimate the detriment to be £92 million in 2011. This is comparable with an estimated detriment of £79 million in 2011 using the profitability-based approach (see Table 1 in Appendix 8.6). However, we note that (a) our cost-based estimate is based on data from one year only (2011) rather than from a longer period as for our profitability-based estimate (for which we analyzed data from 2007-2012), and (b) we have had to make significant simplifications in developing our model to produce this estimate of detriment. On the other hand, the cost-based approach to estimating the detriment is less likely than the profitability-based approach to be affected by the point in the business cycle at which the analysis is carried out. Therefore, despite the limitations in the cost-based approach, we considered that it was a useful secondary point of reference in our estimation of the detriment arising from high cement prices

Quantification of detriment from high cement prices: conclusions

- 8.416 For the reasons set out in paragraphs 8.413 to 8.415, we use £30 million a year as the baseline estimate for the annual detriment arising from high cement prices, but we consider that this is likely to be an underestimate of the average annual detriment over a full business cycle.

³³⁹ We used ROCE on a comprehensive CCA post-impairment basis as found in Table 7.10.

³⁴⁰ The estimate relies on our midpoint estimate of the GB cement producers' cost of capital (WACC)—10 per cent—as set out in Appendix 4.2.

³⁴¹ We used total net assets as found in Appendix 7.7.

³⁴² Hanson argued that, if coordination (were it to exist) led to sustainable prices to customers in line with long-run average incremental costs, then such coordination would not be detrimental to customers, and might confer positive benefits. However, in our view, prices which are consistent with normal rates of return would be sustainable, and, while higher prices under coordination might also be termed 'sustainable', such prices are excessive in that they are higher than would prevail in a well-functioning market.

Cement competitive assessment: conclusions

- 8.417 Evidence on market outcomes indicated that competition in the GB cement markets was not working effectively and was consistent with a degree of coordination on shares of sales. This evidence included (a) CCA profitability after impairment losses across the GB producers (and for Lafarge, Hanson and Cemex taken together) exceeding the cost of capital averaged over the 2007 to 2012 period despite the demand slump during this period and the fact that this period did not cover at least the whole of a business cycle; (b) stability, or even in some cases increases, in variable profit margins (and EBTIDA margins for three out of four producers) between 2007 and 2011, despite a 36 per cent drop in the demand for cement between 2007 and 2009 (and little recovery in demand since 2009) and increasing costs. While FY12 variable profit margins fell on FY11 levels, they had returned to, or were higher than, their respective levels in 2008, before the full impact of the market downturn was felt. In real terms, cement prices peaked in 2009, to then reduce between 2009 and 2012. Overall, average cement prices increased in real terms over the period 2007 to 2012; and (c) there being only small changes in shares of sales over the period 2007 to 2012 despite the significant demand slump in 2009. We also found that customers who did not switch between cement suppliers did not benefit from the relatively lower prices of those customers that did switch—in other words, there was price discrimination. In a well-functioning market, faced with a demand slump, significant excess capacity and high fixed costs, we would expect that market participants would compete vigorously on price to maintain volumes, resulting in greater volatility in shares and significant erosion of margins with returns at or below the cost of capital (and not increasing beyond previous levels while adverse trading conditions continued).
- 8.418 Internal documents provided direct evidence of coordination by Lafarge, Hanson and Cemex and/or a strategic approach to activity in the market by Lafarge, Hanson and Cemex that was aimed at coordinating to achieve market stability. As noted above, the strength of the evidence in the internal documents varied over time. The more recent internal documents also provided evidence of examples of competition between GB producers.³⁴³ In relation to this last observation, as noted in paragraph 8.61, the earlier internal documents we reviewed were collected using a different methodology from the more recent internal documents we reviewed, and we did not expect these document sets to be fully comparable. In particular, the 2008 documents are a selected set of documents, [§].
- 8.419 We found that the GB cement markets were characterized by high concentration (see paragraph 7.16), a significant degree of transparency (see paragraph 8.206), frequent interactions between the main cement producers and a lack of complexity in the competitive environment and the products (see paragraphs 7.30 and 7.31). These factors, taken together, suggest that the GB cement producers have strong awareness of each other's actions and are able to anticipate each other's future actions, leading to strategic interdependence in the competitive behaviour of the cement suppliers and coordination between Cemex, Hanson and Lafarge (now Lafarge Tarmac). Additional factors that in our view increased the structural susceptibility of these markets to coordination included high barriers to entry (see paragraph 7.60), limits to the competitive constraint imposed by imported cement (see paragraph 7.123) and vertical integration into downstream operations (see paragraph 8.290).

³⁴³ A degree of competition is compatible with coordination for the reasons set out in paragraph 8.228.

- 8.420 We found evidence that three GB cement producers (Cemex, Hanson and Lafarge) recognized the current (and past) structural susceptibility of the GB cement markets to coordination and took steps to exploit this susceptibility, using shares of sales as a focal point. This evidence included a strategic focus on maintaining market stability between the members of the coordinating group rather than independently pursuing unconstrained growth, manifested in:
- (a) a focus on maintaining existing (or returning to pre-existing) relative shares of sales (see paragraphs 8.78 to 8.85, 8.120 to 8.151 and 8.221 to 8.236);
 - (b) tit-for-tat used for share balancing (see paragraphs 8.96 to 8.100, 8.103, 8.152 to 8.183 and 8.254 to 8.264);
 - (c) use of cross-sales as a mechanism for transparency, signalling and, on occasion, share balancing (see paragraphs 8.73 and 8.74, 8.114 and 8.266 to 8.268);
 - (d) price announcement behaviour (contributing to price parallelism and to softening of customer resistance to price increases—see paragraph 8.208); and
 - (e) targeting of importers beyond normal competition on price and service (see paragraphs 7.123, 8.101 and 8.190 to 8.193).
- 8.421 We concluded that, although the extent to which they were satisfied might vary over time, the conditions for coordination to be sustained were met in the GB cement markets (with shares of sales as the focal point) in relation to the ability to reach and monitor coordination, the existence of a mechanism for internal sustainability and the external sustainability of coordination.
- 8.422 We described a mechanism for coordination (with shares of sales as the focal point) which was supported by the available evidence. There was some evidence that there were periods when coordination was more successful, and periods when it was less successful (for example, in 2009 following Hanson’s large internalization of cement volumes).
- 8.423 We found that it was likely to be in the interests of Lafarge, Cemex and Hanson to adhere to the mechanism for coordination we described, whereas Tarmac was likely to have been a fringe player. Furthermore, Lafarge’s position as the largest cement producer, as well as the least vertically-integrated producer, is likely to give it strong incentives to take on more of the costs of coordination (including the costs of accommodating the growth in share of sales of fringe cement suppliers, ie Tarmac and cement importers). The different incentives of the GB producers (arising, for example, from differences in their size and in the extent to which they made external sales of cement) explain the different roles they adopt in the market, which in turn explains why shares of sales have not been perfectly stable despite the coordination which has been occurring in the market. The evidence showed that asymmetries in their shares of sales, capacity and degree of vertical integration did not prevent coordination in the GB cement markets.
- 8.424 In relation to recent market developments, our approach was to assess whether such developments were sufficient to displace our provisional conclusions on the existence of coordination in the GB cement markets. Our assessment was necessarily predictive as, given the statutory timescales for our investigation, we could not wait for events to unfold. The most significant market development was the exit of Tarmac (the smallest producer in GB with only a single plant which we had found to be outside the coordinating group of firms without coordination breaking down as a result) as an independent competitor in early 2013 at the same time as

HCM entered the market (also as single-plant producer and the smallest producer in GB—albeit with some additional capacity compared with Tarmac).

- 8.425 The exit of Tarmac and the entry of HCM resulted in no change to (a) the number of participants in the GB cement markets; (b) the number of GB cement producers or (c) total GB cement production capacity. However, we noted that, among other differences, HCM would have more cement than Tarmac to sell to external customers, and that its incentives were likely to be different from those of Tarmac. However, we did not consider that these developments had changed substantially the structure of the GB cement markets. Further, the evidence and analysis available to us indicated that the structural susceptibility of these markets to coordination, and the behaviour of market participants seeking to exploit this susceptibility, had existed over a number of years, and had been resilient to similar or more significant changes to the market (in particular, the significant downturn in demand and the vertical integration of Hanson into cement production over the years 2007 to 2009).
- 8.426 We saw evidence of the impact that HCM has had on the market to date, namely in the volumes lost to HCM by other cement suppliers and HCM's impact on pricing. We did not consider this evidence to be representative of the longer-term state of the market, given that HCM has had to build its customer and sales base up from a very limited position from its formation in January 2013. We also noted that we have seen [redacted].
- 8.427 For the reasons outlined in paragraphs 8.424 to 8.426, and taking into account the uncertainty regarding HCM's longer-term behaviour, we concluded that, even if all of HCM's capacity were outside the coordinating group in the longer term, the formation of HCM was unlikely to be sufficiently market disrupting on its own (or in conjunction with the pre-existing competitive fringe and/or other recent market developments such as the formation of Lafarge Tarmac—see paragraphs 8.358 to 8.367—or the acquisition by CRH of additional cement import terminals—see paragraphs 8.351 to 8.357)—materially to reduce our concerns about coordination in the GB cement markets.
- 8.428 Similarly, we did not consider that a possible future recovery in demand was likely to undermine coordination in these markets, given that coordination has persisted during the current period of significantly reduced demand.
- 8.429 We conclude that there is a combination of structural and conduct features in the GB bulk and bagged cement markets that give rise to an AEC in those markets.
- 8.430 The structural features are:
- (a) high market concentration;
 - (b) transparency of sales and production shares, wins and losses and customer-supplier relationships;
 - (c) high barriers to entry (including limits to the constraint imposed by imported cement);
 - (d) homogeneity of product;
 - (e) customer characteristics and behaviour (in particular, regularity of purchases, purchases at fixed locations, concentration of customer base and single sourcing for a particular job site); and

(f) vertical integration from cement into downstream operations.

8.431 The conduct features, the individual significance of which varies over time, are:

- (a) a strategic focus on maintaining market stability between the members of the coordinating group, frequently manifested in a focus on maintaining existing (or returning to pre-existing) relative shares of sales;
- (b) tit-for-tat behaviour used to balance shares;
- (c) price announcement behaviour (which facilitates price parallelism, and softens customer resistance to price increases);
- (d) use of cross-sales as a mechanism for transparency, signalling and, on occasion, share balancing; and
- (e) targeting of importers beyond normal competition on price and service.

8.432 These structural and conduct features combine together to give rise to an overarching feature in the GB cement markets, namely coordination among Cemex, Hanson and Lafarge (now Lafarge Tarmac).

8.433 The likely effect of these features is higher prices of cement in GB than would otherwise be the case for all GB cement users,³⁴⁴ whether this cement is ultimately sold through independent RMX and concrete producers, independent merchants or through the downstream businesses of the Majors.

8.434 We consider there to be a material customer detriment arising from high cement prices. We estimated the size of this detriment using two approaches. As set out in paragraph 8.416, we use £30 million a year as the baseline estimate for the annual detriment arising from high cement prices, but we consider that this is likely to be an underestimate of the average annual detriment over a full business cycle.

Competitive assessment of the GGBS supply chain

8.435 We reviewed in Section 7 evidence on the GGBS market. In this section, we present our assessment of competition in the GGBS supply chain.

8.436 Lafarge Tarmac is the sole producer of GBS in GB. GBS is the key raw material input into the production of GGBS, which is an input into the production of blended cements and a partial substitute for CEM I in the production of downstream cement products. Hanson is the sole producer of GGBS in GB. Both Lafarge Tarmac and Hanson are also significant producers in the GB cement markets. We therefore considered that the sole production by these parties of GBS and GGBS in GB respectively warranted consideration. Our assessment of competitive effects in GGBS therefore focused on the possible exercise of unilateral market power in the supply of GGBS and/or GBS, which would lead to higher prices and/or lower availability of GGBS than would otherwise be the case.³⁴⁵

³⁴⁴ Although certain buyers (such as Aggregate Industries and some of the larger bulk and bagged cement buyers) may be able to exert a degree of buyer power and offer some resistance to price increases, these customers represent only a modest proportion of total cement sales and, given the high degree of price discrimination in the GB cement markets, their buyer power is unlikely to benefit customers of cement more generally.

³⁴⁵ We explain in paragraph 7.255 why we focus both on GBS and GGBS in our assessment of competition in GGBS.

8.437 Our assessment of competition in GGBS is structured as follows: we first explain in more detail the relevance of GGBS to our investigation. We then evaluate the evidence on the effectiveness of competition in the GGBS supply chain. We then analyse further the incentives of the participants in the GGBS supply chain on the basis that they are also cement producers. We then conclude on our competitive assessment of GGBS and its relationship to cement.

Relevance of GGBS to our investigation

8.438 The products comprised in the OFT's reference are aggregates, cement and RMX. Cement is defined in that reference to mean grey cement. As we explained in Section 1 we consider that grey cement means not just CEM I but cement blends in which CEM I is blended with other cementitious products³⁴⁶ to produce cements of differing physical properties. GGBS is one such cementitious product.

8.439 Under the terms of section 134(1) of the Act, the CC must decide whether any feature, or combination of features, of each relevant market prevents, restricts or distorts competition in connection with the supply or acquisition of any goods or services in the United Kingdom or a part of the United Kingdom (an AEC). Section 134(3) provides that, for those purposes, a 'relevant market' is a market for goods or services of a description specified in the reference to the CC. It is accordingly clear that the 'feature' giving rise to the AEC must be a feature of such a relevant market. Section 134 makes clear, however, that the prevention, restriction or distortion of competition which the CC may identify may concern the supply of *any* goods or services in the United Kingdom. The Guidelines (paragraph 153) confirm that 'The CC may also consider effects in neighbouring markets, including those which are upstream or downstream of the relevant market'. It will of course frequently be the case that the feature in question, being a feature of a relevant market, gives rise to adverse effects in that same relevant market. However, the CC is also able to consider the effects of a feature of a relevant market on other markets, and in particular whether the feature prevents, restricts or distorts competition in any other markets.

8.440 We note further that section 131(2) of the Act defines the scope of the features of the market concerned that may be identified for that purpose, and that this includes 'any conduct (whether or not in the market concerned) of one or more than one person who supplies or acquires goods or services in the market concerned' (section 131(2)(b)). Thus conduct on the part of a person who is active on the relevant market may be regarded as a feature of a relevant market, even if the conduct relates to another market.

8.441 Our findings concerning the GGBS supply chain (as set out below in paragraphs 8.480 to 8.489) relate to features of a relevant market. In summary, the features with which we are concerned and which relate to GGBS include structural aspects of the GB cement market, and conduct by persons who supply goods or services on the GB cement market. As set out below, we find that those features prevent, restrict or distort competition both in the GB market for GGBS and in the GB markets for cement. As a result, these are matters which fall within the scope of the present reference.

³⁴⁶ Cementitious products include GGBS and PFA—see Section 2.

Effectiveness of competition in the GGBS supply chain

- 8.442 The GGBS market is highly concentrated, with Hanson having a share of sales in GB of between 85 and 90 per cent in each year from 2007 to 2011. The remaining 10 to 15 per cent of GGBS supplied in GB is imported (see paragraph 7.257). We concluded in paragraph 7.265 that imports of GGBS were not a strong competitive constraint on locally produced GGBS, because of the cost disadvantage likely to be incurred by importers. This was consistent with the evidence of the low market share of imported GGBS in GB. We also noted that most of the GGBS which is imported is used for internal consumption and is not available for purchase by independent RMX and concrete block producers, which further limits the competitive constraint from imported GGBS on locally produced GGBS.
- 8.443 This high concentration in the supply of GGBS is secured by a series of exclusive agreements for the supply of BFS and GBS in GB. In the UK, Lafarge Tarmac and the GB steel producers (Tata Steel and SSI) have entered into and maintained agreements whereby Lafarge Tarmac currently has exclusive rights to produce GBS from each of the three GB steel plants ('the BFS agreements'): Lafarge Tarmac owns the equipment required to water-cool the slag so as to transform it into a cementitious granulate material (ie GBS). Lafarge Tarmac then sells GBS to Hanson under three exclusive long-term contracts ('the GBS agreements'). Further details of these contracts can be found in paragraphs 7.295 to 7.297.
- 8.444 BFS is the main raw material input into the production of GBS, which in turn is the main raw material input into the production of GGBS. As a result of the BFS agreements, which give Lafarge Tarmac exclusive rights to produce GBS from each of the three GB steel plants, Lafarge Tarmac is the sole GB producer of GBS and it currently owns all the plants used in GB for the production of GBS. The combination of the fact that Lafarge Tarmac is the sole GB producer of GBS and that it has entered and maintained exclusive agreements with Hanson for the supply of GBS to produce GGBS, results in Hanson being the sole GB producer of GGBS and Hanson owning all the grinding plants currently used in GB for production of GGBS (in relation to which, it is also important to note that imports of GGBS are limited—see paragraph 7.257).
- 8.445 The situation is therefore one in which Lafarge Tarmac is the only firm in a position to obtain supplies of BFS as an input to GBS in GB, and Hanson has a very high market share (90 per cent) for the supply of GGBS in GB. There is therefore potential for market power at both levels of the GGBS supply chain: for the supply of GBS to be ground into GGBS, and for the supply of GGBS.
- 8.446 This market structure is secured by a series of exclusive arrangements at both levels of the supply chain, which create a strategic barrier to entry in GB production of GBS and a strategic barrier to entry in GB production of GGBS respectively by preventing access to the key inputs for the production of GBS and GGBS in GB. In the absence of access to the required inputs, no other supplier has invested in the necessary plant or facilities to produce GBS or GGBS.
- 8.447 Our analysis of profitability, margins and prices of GGBS strongly suggested to us that Hanson had market power in the supply of GGBS, as a result of which it was able to set prices at above competitive levels.³⁴⁷

³⁴⁷ We also analysed Lafarge Tarmac's profitability for the supply of GBS and its ability and incentives to exercise market power in the supply of GBS. This is set out below in paragraphs 8.471–8.474. We found that Lafarge Tarmac's ability to exercise

- (a) Our analysis of Hanson’s profitability for the supply of GGBS found that, though Hanson’s profitability has reduced between 2007 and 2012, it has remained considerably in excess of our benchmark for the cost of capital for each year in the period from 2007 to 2012. In a well-functioning market, we would expect, as set out in paragraph 116 of the Guidelines, that: ‘Firms ... would generally earn no more than a “normal” rate of profit... ie the rate of return on capital employed for a particular business activity would be equal to the opportunity cost of capital for that activity’.
- (b) Prices and margins for GGBS were not substantially affected by the large reduction in the demand for GGBS from 2009 onwards. Despite a large reduction in the demand for GGBS following the demand slump, although there was evidence of some reduction in margins on variable costs in percentage terms, this did not translate into a substantial reduction in Hanson’s absolute margins or in prices which we might expect to see in a competitive market. This further indicated that Hanson had a degree of pricing power for GGBS in that it had been able to maintain prices and margins in the face of a large reduction in demand.
- (c) The pricing policy of Hanson in relation to GGBS, whereby prices of GGBS to individual customers appear to be set mainly by reference to the maximum price that each customer is willing to pay (and therefore depending, among others, on the price of PFA and CEM I an individual customer is able to obtain), also suggested to us that Hanson had market power in the supply of GGBS and was able to price discriminate depending on the willingness to pay of different customers (see paragraphs 7.291 to 7.294).

8.448 We also noted the internal documentary evidence we reviewed on GGBS which acknowledged the competitive advantages that Hanson’s position in GGBS conferred on Hanson, and the cost disadvantages faced by GGBS imports relative to domestically produced GGBS. This evidence was also consistent with Hanson having market power.

8.449 In its response to the Addendum to provisional findings, Hanson told us that in standard economic theory, when demand fell, margin might fall both in monopoly and competitive markets, but margin fell more under monopoly than under competition. Therefore, it submitted that the fact that Hanson’s GGBS margin did not fall substantially in response to the demand shock was more consistent with Hanson operating in a competitive market than as a monopoly.³⁴⁸ We first noted that it is not necessarily true, as Hanson stated, that a monopolist would reduce margins during a downturn. It requires a particular specification of the demand function to arrive at this conclusion, and there is no evidence that such a demand function applies in this situation.³⁴⁹ Moreover, although it is true that under certain assumptions for the demand curve, we would expect prices and margins to fall more under monopoly than under competition, we did not think the conditions were satisfied in the case of GGBS. The intuition behind the result that margins may fall more under monopoly than under competition is that, if competition is intense, there is little scope for reducing margins because these are already at competitive levels. However, one cannot make the converse inference that because margins did not fall substantially the market was therefore competitive: the evidence of excess profitability in GGBS strongly suggested to us that there would be ample scope for margins to reduce, and

 market power for the supply of GBS was currently restricted by the terms under which it produces GBS, and our analysis of Lafarge Tarmac’s profitability for GBS does not suggest that it is earning excess profits in GBS.

³⁴⁸ Hanson response to the Addendum to provisional findings, paragraph 6.3.

³⁴⁹ See also paragraph 8.30.

therefore we interpreted the relative resilience of prices and margins as indicating that Hanson had pricing power.

- 8.450 In its response to the Addendum to provisional findings,³⁵⁰ Hanson told us that we had omitted from our thinking the binding supply and capacity constraints on GGBS production in GB. It submitted that there was a finite amount of BFS—the essential raw material for GGBS—available from the three steelworks in GB, and that this raw material constraint was outside the GGBS producers’ control. It further submitted that there was a binding constraint on the current capacity of the GBS granulators. Hanson told us that even if the GBS supply chain ran at maximum capacity (which was highly unlikely), there would be a limited amount of GGBS produced in the UK from GB GBS and certainly no more than an additional few hundred thousand additional tonnes. Hanson submitted that prices for GGBS in GB were therefore determined by the fact that demand for cementitious product exceeded production capacity, and that the price of GGBS would therefore be similar to the current price even if there were many GGBS producers.
- 8.451 We considered whether Hanson’s high prices and excess profits in GGBS might be partly a result of capacity constraints, rather than solely due to the exercise of market power by Hanson.
- 8.452 Our detailed analysis of capacity in the production of GGBS and the main bottlenecks on GGBS production is contained in paragraphs 7.266 to 7.279 and Appendix 13.5. We found that, in 2011 and 2012, the volumes of GGBS produced by Hanson were in line with the volumes of GBS produced, which in turn were largely determined by the availability of BFS that was water-cooled and therefore appropriate to be transformed into GBS. In other words, Hanson appeared to have produced as much GGBS in 2011 and 2012 as it could, given the amount of domestic BFS available to be water-cooled. This could suggest that the high profitability in GGBS may be explained at least in part by the supply constraints on GGBS.
- 8.453 However, there was also evidence that not all of the high profits in GGBS were explained by supply constraints in GGBS. First, we noted that steel production in GB was particularly low in 2011 and 2012 due to the facts that (a) the Teesside steel plant was closed in 2011 and only reopened in April 2012, and (b) a blast furnace at Port Talbot was relined. Therefore, the fact that Hanson was producing close to capacity given steel production in 2011 and 2012 is likely to be related to the low levels of steel production in those years.
- 8.454 We note in this respect that there is evidence that Hanson has not always maximized sales of GGBS, and that there is currently a stockpile of around [less than 1] Mt of unused GBS as a result of this. This also suggests that the situation in 2011 and 2012 may not be representative of the situation prior to 2011, and that therefore some of the excess profits for 2007 to 2012 are likely to have arisen as a result of exercise of market power rather than solely because of capacity constraints.³⁵¹
- 8.455 In addition to this, Hanson submitted that the stockpiles of GBS degenerated over time, and that this would result in lower quality GGBS being produced. It submitted that the adverse effects of poor quality GGBS would inevitably result in complaints from customers at RMX level. [REDACTED]; but it could not rely on this when producing

³⁵⁰ [Hanson response to the Addendum to provisional findings](#), paragraphs 4.21–4.24.

³⁵¹ Hanson submitted evidence that in 2012, it had used more GBS than was produced in GB to produce GGBS (paragraph 4.27 of [Hanson response to the Addendum to provisional findings](#)). However, as we set out in paragraph 8.453 above, steel production in GB was particularly low in 2012. Moreover, even if production was maximized in 2012, the accumulation of stockpiles over the years shows that this was not always the case in previous years.

GGBS as it was blended with a wide variety of CEM I at the RMX level.³⁵² We therefore considered that the fact that the stockpile was not used was largely a result of a decision made by Hanson to specialize in high-quality GGBS, but that there would likely be a use for cheaper/lower quality GGBS in some CEM III applications and in some RMX applications. In other words, we considered that the fact that such lower quality GGBS was not produced in GB was likely to be a result of Hanson's ability to exercise market power and restrict supply of GGBS to high-quality GGBS. This was another reason why we considered that the excess profits in GGBS, and high prices, were not solely explained by capacity constraints in GGBS.

- 8.456 Finally, we noted that, even if there were capacity constraints, we would still expect more competition in the GGBS market to bring substantial benefits to consumers. In this respect, we noted that there was evidence that Hanson's pricing policy for GGBS was to set prices to individual customers at the maximum level that individual customers were willing to pay before switching to non-GGBS alternatives (see paragraph 7.293). This is further evidence supporting our view that the excess profits and high prices we observe derive mostly from market power rather than from capacity constraints on GGBS. Indeed, even if GGBS were scarce, we would expect a more competitive GGBS market to be of benefit as rival GGBS suppliers compete to seek to win the business of higher value customers (eg those with higher willingness to pay for GGBS).
- 8.457 Therefore, in light of the evidence above, we concluded that, although the high profits enjoyed by Hanson in the period 2007 to 2012 may have been sustained in part because of capacity constraints, there is evidence that a substantial part of these profits were derived as a result of the exercise of market power by Hanson in the supply of GGBS.
- 8.458 Overall, therefore, our assessment suggested to us that Hanson was able to exercise market power in the supply of GGBS in GB so as to maintain GGBS prices at a level which would not be seen in a competitive market. Its market power is derived from its position as the only producer of GGBS in GB.
- 8.459 Hanson told us that the agreements between Hanson and Tarmac were concluded by way of a vertical supply agreement and on an entirely legal basis, and had been recognized as such by the relevant competition authorities. We were told by Hanson that the agreements were fully disclosed and visible to the European Commission at the time it assessed the Heidelberg/Hanson merger, and that the European Commission had no concerns and did not require remedial action or any form of undertakings. We note that since the European Commission did not identify any potential merger-specific concerns in GGBS, the absence of undertakings or remedial actions is uninformative as to the competitive assessment of the agreements. Hanson also told us that, as far as it was aware, particulars of at least one agreement relating to the supply of GBS by Tarmac to Civil & Marine were furnished to the OFT under the Restrictive Trade Practices Acts 1976 and 1997 (RTPA), and received section 21(2) directions from the Secretary of State. We were told that this confirmed that any restrictions in the agreements were not significant enough to warrant a reference to the Restrictive Practices Court. This fact does not preclude the CC from assessing these agreements as part of its market investigation under the Enterprise Act, nor from finding that they are a feature that contributes to an AEC. It is noteworthy that a significant period of time has elapsed during which the RTPA has been repealed by the Competition Act 1998. The Competition Act 1998 provided

³⁵² [Hanson response to the Addendum to provisional findings](#), Annex B.

an exemption³⁵³ for certain agreements and/or contractual provisions previously reviewed under the RTPA but this exemption was only for a transitional period of one to five years, depending on the case.

- 8.460 We noted that two other European regulatory authorities had expressed concerns about the supply of GGBS in their jurisdictions (see Appendix 7.6), although we treated this evidence as background context rather than as precedents for our conclusions.³⁵⁴
- 8.461 Hanson told us that it was not able to exercise market power in relation to GGBS in GB. It said that this was because (a) Hanson competed with importers of GGBS products; (b) the substitutability of GGBS with cement constrained the pricing of GGBS; (c) PFA was a readily available substitute for GGBS which served as a strong constraint on all GGBS; and (d) the majority of GGBS purchasers were big companies using large volumes of the material, and purchasers had significant bargaining power.
- 8.462 However, in our view, the existence of an upper limit on pricing (for example, from GGBS imports or cement made principally from clinker and/or PFA) is not sufficient to show that there is no market power.³⁵⁵ Further, (a) regardless of the size of buyers, countervailing buyer power would only exist where purchasers had access to a sufficiently attractive alternative to purchasing GGBS; (b) buyer power exerted by some GGBS purchasers would seem unlikely to protect all buyers from higher prices, given the bilateral and confidential nature of purchase negotiations; and (c) as set out in paragraph 7.280(b), the large majority of Hanson's sales of GGBS in 2011 were to the Majors. We considered that the incentives of those Majors that are also members of the coordinating group of firms to seek lower prices for GGBS would be muted by virtue of their participation in the coordination in the GB cement markets.

Structural links between GGBS and cement markets and impact on Hanson and Lafarge Tarmac's incentives in the GGBS market

- 8.463 We analysed further the mechanism by which Lafarge Tarmac's and Hanson's participation in both the GB cement markets and the GGBS supply chain contribute to their incentives to maintain or exercise market power in the GGBS supply chain. Throughout this section, we focus mainly on the unilateral exercise of market power, though we discuss how coordination in the cement market would affect Hanson and Lafarge Tarmac incentives in GGBS in paragraph 8.495.

Hanson incentives

- 8.464 There are two effects which may lead to prices of GGBS being higher than they would be if there were several competing (and, in the case of the second effect, independent, ie non-cement-producing) producers of GGBS:
- By virtue of providing the great majority of GGBS consumed in GB, Hanson's incentives are to set prices of GGBS at the point where demand for GGBS is

³⁵³ Paragraph 1(5) and Part IV, Chapter III, of Schedule 13 to the Competition Act 1998.

³⁵⁴ We also noted that, on 30 August 2013 (ie during our investigation), the Belgian competition authorities ruled that the large national Belgian cement producers, their trade association and the National Centre for technical and scientific research for the cement industry had infringed Article 101 of the TFEU and the national equivalent provisions. They were found to have colluded with the aim of delaying the adoption of a licence and of standards making it possible for RMX producers to blend GGBS with CEM I directly at the RMX plant (as an alternative to using pre-blended CEM III). We considered that this decision had less relevance to our investigation.

³⁵⁵ We discuss this in more detail in our assessment of GGBS market definition, see for example paragraph 5.75.

elastic, and therefore prices may be higher than if there were competing producers of GGBS in GB. The strength of this effect depends on how close a substitute CEM I or PFA combined with CEM I are for GGBS combined with CEM I³⁵⁶ and on how close a substitute imported GGBS is for domestically-produced GGBS.

- There is also an additional incentive on Hanson to further increase the price of GGBS because of Hanson's presence in the cement market.

8.465 The first effect is standard economic price theory and would apply to any owner in the same position as Hanson (whether or not a cement producer). In the following paragraphs, we expand on the second effect (the additional incentive on Hanson to increase GGBS prices because it is a cement producer), and the conditions/factors which will impact on this incentive. This effect occurs because a change in price of GGBS may also have an impact on cement demand because of partial substitution, and therefore on Hanson's cement volumes and profits.

8.466 In order to understand how Hanson's incentives for GGBS pricing are affected because it is also a cement producer, we now consider the impact on Hanson's profits of a reduction in GGBS prices. If Hanson were to (unilaterally) reduce prices of GGBS by a small amount:

- First of all, we would expect demand for GGBS produced by Hanson to increase if prices of GGBS charged by Hanson were to reduce. The amount by which GGBS demand would increase will depend on the price elasticity of demand for GGBS.³⁵⁷
- Second, if Hanson reduced its GGBS prices, all other things being equal, we would expect GGBS to become relatively cheaper compared with CEM I, and may therefore expect a reduction in demand for CEM I and CEM II—it might not be one-for-one (ie there may be overall increase in demand for cementitious products), but there would most likely be some substitution effect. This may in turn affect Hanson cement sales. If we assume that Hanson would be affected in proportion to its market share, this would mean that demand for cement produced by Hanson would be reduced by about 20 per cent of the overall reduction in cement demand due to substitution to GGBS.
- Third, because GGBS is an input into blended cement as well as an input into RMX, a reduction in the prices of GGBS may also have the impact of reducing the costs to competing cement producers of producing blended cement, and of reducing the costs to competing RMX producers of producing RMX (vertical effects). We do not look at this effect in detail, but note that this vertical effect would go in the same direction as the second effect in paragraph 8.464 above in the sense of reducing Hanson's incentives to lower GGBS prices because of its presence as a cement and RMX producer.

³⁵⁶ Or how close CEM I and pre-blended CEM II are substitutes for CEM III.

³⁵⁷ Hanson told us, in paragraph 7.5(i) of its [response to the Addendum to provisional findings](#), that if it were a near monopolist in GGBS, and setting the profit-maximizing prices, it would not find it profitable to reduce prices, so that our reasoning would only apply if Hanson were setting prices above the monopoly prices. We disagree with this interpretation of our reasoning: clearly at the profit-maximizing level of prices, Hanson would not have an incentive to lower (or increase) prices, by definition. However, the aim of our illustration was to understand the various effects that interplayed in determining the profit-maximizing prices for GGBS for Hanson. In that respect we therefore looked at the impact, at any given price, of lowering prices on Hanson's profits and the various effects these would have on profits. All of these effects would interplay to determine the profit-maximizing price.

8.467 Appendix 8.8 sets out the effect on Hanson's profits in both cement and GGBS of a small reduction in its GGBS prices. We find that, compared with a situation where Hanson is not a cement producer, Hanson has comparatively less incentive to lower the price of GGBS because of an additional impact, namely that the reduction in GGBS prices may cannibalize some of its cement sales. The overall effect is likely to depend mainly on three factors:

- The relative GGBS and cement margins: if cement margins are high compared with GGBS margins, loss of sales of cement will have more negative impact on profits than additional sales in GGBS.
- Cement market share: the larger the cement market share of Hanson, the more impact on its cement sales.
- The amount of substitution between GGBS and cement: if there is a high degree of substitution (which is likely to be the case if GGBS prices are set on the elastic part of demand curve), the impact of lost cement sales will be larger.

8.468 From the information that we have on these various factors, we know that:

- Cement unit margins over variable costs are similar, though slightly higher, than GGBS variable margins.³⁵⁸
- Hanson's share of the cement market, of about 20 per cent, means that, if Hanson were to cut the price of GGBS, 1 in every 5 tonnes of reduced cement demand would on average relate to reduced sales by Hanson.
- Cross-elasticity of demand for cement to GGBS prices: though we do not have any estimates, the evidence we gathered on GGBS prices and how they compare to CEM I prices in paragraphs 5.61 to 5.62 could suggest relatively high cross-elasticities at current GGBS and CEM I prices (the evidence suggests that GGBS prices are currently set at levels where small changes in GGBS prices may translate into increased CEM I and PFA use instead).

8.469 Overall, and compared with a hypothetical situation where Hanson was not present in the GB cement market, there is therefore likely to be an additional incentive on Hanson to raise prices of GGBS because of Hanson's activities in the cement market, because lower GGBS prices may reduce Hanson's cement profits.

8.470 Hanson told us in its response to the Addendum to provisional findings that we had failed to quantify the magnitude of the additional effect from Hanson's presence in both cement and GGBS on GGBS prices, and that this effect would, at most, be weak. In support of this argument, it submitted that our analysis suggested that, if Hanson reduced prices of GGBS, 1 in every 5 tonnes of reduced cement demand on average would relate to reduced sales by Hanson, which would moderate the scale of this effect. It also submitted that the comparison of cement and GGBS margins was incomplete because it did not factor in the additional revenues that result from carbon allowances which are unused because of the reduced production of cement. We agreed that this latter effect may dampen the impact of lost cement sales (as a consequence of reduced GGBS prices), though we note that given the current low levels of carbon prices this would not be likely to be a significant effect.³⁵⁹ Overall, we noted that while we were not able to quantify the effect of Hanson's presence in both

³⁵⁸ See Appendix 6.5 for cement margins; and Appendix 7.6 for GGBS margins.

³⁵⁹ [Hanson response to the Addendum to provisional findings](#), paragraphs 7.4 & 7.5.

cement and GGBS on its incentives in GGBS, we were confident that Hanson had incentives, over and above its direct incentives in the GGBS markets, to maintain high prices of GGBS because of the impact this may have on the cement market. Importantly, we note in paragraph 8.495 below that the existence of coordination in the cement market would further strengthen this incentive. We also had regard to the fact that Hanson's incentive to maintain high GGBS prices as a result of its presence in both cement and GGBS was aligned with its incentive to maintain high GGBS prices as a result of its supplying the great majority of GGBS consumed in GB.

Lafarge Tarmac incentives

- 8.471 Lafarge Tarmac's ability to exercise market power in the supply of GBS is currently restricted by the terms under which it produces GBS. In particular, given both the process of steel production (whereby the supply of BFS that is processed to produce GBS is determined by the iron and steel production decisions at the steelworks), and its obligations under the GBS agreements (where it is obliged to maximize the production of GBS and ensure its adequate supply to Hanson), Lafarge Tarmac currently has restricted ability to influence GBS volumes. Furthermore, under the GBS agreements, the price paid by Hanson to Lafarge Tarmac for its GBS is determined as a percentage of achieved prices for GGBS, which restricts Lafarge Tarmac's ability to influence the prices of GBS and GGBS.
- 8.472 However, although the GBS agreements currently limit Lafarge Tarmac's ability to influence prices of GBS and GGBS in GB, the GBS agreements between Lafarge Tarmac and Hanson have the effect of aligning Lafarge Tarmac's and Hanson's incentives, through the contractual prohibition on Lafarge Tarmac making GBS available to any third party for GGBS production in the UK, and through the contractual provision under which Lafarge Tarmac obtains a price for GBS from Hanson which is proportional to the price of GGBS achieved by Hanson.
- 8.473 In addition to this, because Lafarge Tarmac is active both in the GGBS supply chain and as a GB cement producer, it has similar incentives to those of Hanson as described in paragraphs 8.466 to 8.470 above. Lafarge Tarmac will benefit from high GGBS prices both through obtaining higher prices for its GBS (as set out in the previous paragraph) and additionally through the indirect impact that these high prices for GGBS have on Lafarge Tarmac's profits from cement sales: the higher the price of GGBS, the lower the constraint on cement prices from GGBS, and the higher Lafarge Tarmac's profits in the GB cement market. This effect is all the more pronounced because of Lafarge Tarmac's large share of GB cement sales, which means that Lafarge Tarmac will benefit to a greater extent from high cement prices.
- 8.474 The beneficial effect of high GGBS prices on Lafarge Tarmac's cement profitability means that, even if it had the ability to do so,³⁶⁰ Lafarge Tarmac would only have limited incentives to seek to introduce more competition in the supply of GGBS.

Conclusion on Hanson and Lafarge Tarmac incentives

- 8.475 We therefore find that, because Hanson and Lafarge Tarmac are active both in the GGBS supply chain and as GB cement producers, they have additional incentives (over and above those arising from their positions as sole producers of GGBS and GBS respectively) unilaterally to maintain high prices of GGBS because this leads to higher cement prices, with beneficial effects on the profitability of their cement oper-

³⁶⁰ As we explain above (see paragraph 8.472), Lafarge Tarmac's current ability to introduce more competition in the supply of GGBS is limited by the GBS agreements.

ations. The GBS agreements between Lafarge Tarmac and Hanson, though they restrict Lafarge Tarmac's ability to influence the pricing of GBS and GGBS, further contribute to aligning Lafarge Tarmac and Hanson incentives through the contractual prohibition on Lafarge Tarmac making GBS available to any third party for GGBS production in the UK, and through the contractual provision under which Lafarge Tarmac obtains a price for GBS from Hanson which is proportional to the price of GGBS achieved by Hanson.

- 8.476 The analysis above does not take into account the presence of coordination in the cement market. We note that the coordination we have found to exist in the cement market is likely to act as a further disincentive on Lafarge Tarmac and on Hanson to seek lower GGBS prices. Thus, the incentive for Lafarge Tarmac and Hanson not to disrupt the prices of cement through lower GGBS prices is likely to be stronger in a coordinated market. In particular, with the existence of coordination in the cement market, lowering GGBS prices could be interpreted by other cement producers as a deviation from the coordination, and thereby provoke a reaction from the other cement producers (punishment in the cement or the GGBS market), which would further reduce their incentives to seek lower GGBS prices. Evidence for the fact that punishments for deviations in cement had in the past taken place in the GGBS market was set out in our provisional findings. In particular, we noted the following in footnote 194 to paragraph 8.218: 'For example, in response to Hanson's 2009 internalization, Lafarge internalized its own purchases from Hanson, some of which were GGBS purchases switched to PFA—see paragraph 7.206(a).³⁶¹ See also Appendix 8.3, paragraph 19, in which Hanson anticipates retaliation on GGBS for actions in packed cement.
- 8.477 Lafarge Tarmac told us, in its response to the Addendum to provisional findings, that the conclusion that coordination between Lafarge Tarmac and Hanson in cement acted as a further disincentive on Lafarge Tarmac and Hanson to seek lower GGBS prices was problematic for the following reasons:³⁶²
- (a) Lafarge Tarmac submitted that it had no ability to influence the pricing of GGBS under its GBS supply agreements with Hanson. In addition, it noted that Tarmac was not a member of the purported coordinating group in cement and yet we had found that competition in the supply of GGBS had not been effective even before Tarmac became part of the Lafarge Tarmac JV.
 - (b) Lafarge Tarmac submitted that it had no position in GBS prior to 7 January 2013 when the JV between Lafarge and Tarmac was formed, and that the CC raised no concerns about the combination of Tarmac's GBS position with Lafarge's cement position at the time of the merger investigation. It also noted that, based on the CC's theory, Tarmac was not part of the purported coordinating group and accordingly, Lafarge's purported coordination with Hanson was of no consequence: Lafarge had no ability to influence prices of GGBS.
- 8.478 With respect to comment (a) above, we agree with Lafarge Tarmac that it has limited ability to influence the pricing of GGBS under its GBS supply agreements with Hanson (see paragraph 8.472 above). In relation to the comment that Tarmac was not part of the purported coordinating group, we note that our findings that Lafarge Tarmac has an incentive to maintain high prices of GGBS because this leads to higher cement prices does not depend uniquely on the existence of coordination in

³⁶¹ Lafarge Tarmac told us, in footnote 6 to its [response to the Addendum to provisional findings](#), that at the time of the internalization, Lafarge was not present in GGBS or GBS. We did not think that this was relevant: the point we were illustrating was that the existence of coordination in cement had an impact on behaviours in GGBS.

³⁶² [Lafarge Tarmac response to the Addendum to provisional findings](#), paragraph 19.

the cement market, but also arises because Lafarge Tarmac is a cement producer and hence any reduction in prices of GGBS may affect its cement profitability. Such an effect existed prior to the JV between Tarmac and Lafarge, as Tarmac was already a cement producer prior to this JV. We also note that, even if Tarmac were not part of the coordinating group, it was benefiting from the existence of coordination in cement in so far as this resulted in higher cement prices. Tarmac was therefore deriving benefits from the coordination and the resulting high cement prices, albeit to a lesser extent due to its relatively smaller presence in the cement market.

8.479 Regarding Lafarge Tarmac's comment that the CC did not raise concerns about the combination of Tarmac's GBS position with Lafarge's cement position at the time of the merger inquiry, we note that the main overlaps between the merging parties in that inquiry were in the aggregates, cement, RMX and asphalt market; the focus for the JV inquiry was therefore on these areas of overlap between the merging parties. During this investigation, we have looked into the markets in more detail.

GGBS supply chain competitive assessment: conclusions

8.480 Taken together, we find that the GGBS supply chain is characterized by the following:

- (a) GGBS is both an input into the production of blended cements and a partial substitute for CEM I in the production of RMX and other downstream uses of cement.
- (b) The main participants in the GBS/GGBS supply chain in GB are Lafarge Tarmac and Hanson, each of which is also one of the Top 3 GB cement producers.
- (c) Lafarge Tarmac's and Hanson's extensive participation in both the GB cement markets and the GGBS supply chain gives them incentives that would not otherwise exist to take into account the interaction between these products in a way which is liable to distort competition both in the GGBS market and in the cement market.
- (d) Lafarge Tarmac is the sole producer of GBS in GB having entered into and maintained its BFS agreements with the GB steel producers (thereby creating a strategic barrier to entry into GBS production in GB), and Hanson is the sole producer of GGBS in GB having entered into and maintained its GBS agreements with Lafarge Tarmac, giving Hanson exclusive rights to use all GBS produced in GB for the production of GGBS (thereby creating a strategic barrier to entry into GGBS production in GB). One consequence of the agreements is that Lafarge Tarmac owns all the plants used in GB for the production of GBS, and Hanson owns all the grinding plants used in GB for producing GGBS.
- (e) Imports of GGBS into GB are limited (the evidence on imports of GGBS is set out in paragraphs 7.257 to 7.265), with Hanson accounting for around 90 per cent of GGBS sales in GB in 2011.

8.481 Our findings in relation to competitive effects in the GGBS market are as follows:

- (a) Hanson's profitability for the supply of GGBS, though it has reduced between 2007 and 2012, remained considerably in excess of our benchmark for the cost of capital for each year in the period 2007 to 2012.
- (b) Although prices of CEM I and PFA are likely to constrain prices of GGBS currently, this is because Hanson is the sole GB producer of GGBS and can

therefore set GGBS prices at or just below levels at which customers would switch to alternatives; in other words, the cost of producing RMX (or other downstream concrete products) with CEM I and/or CEM I and PFA provides a 'price ceiling' for the inflated GGBS prices.

- (c) Prices and margins for GGBS were not substantially affected by the large reduction in GGBS demand, which suggests a degree of pricing power by Hanson.
- (d) The pricing policy of Hanson in relation to GGBS, whereby prices of GGBS to individual customers appear to be set mainly by reference to the maximum price that each customer is willing to pay (and therefore depending, among others, on the price of PFA and CEM I an individual customer is able to obtain), also suggest that Hanson has market power in the supply of GGBS and is able to price discriminate depending on the willingness to pay of different customers.

8.482 In relation to GBS, we find that:

- (a) At the GBS level, under the Lafarge Tarmac–Hanson GBS agreements (i) the price of GBS is currently set as a percentage of Hanson's selling price of GGBS, and (ii) Lafarge Tarmac has the obligation to supply Hanson with all the GBS it needs and can only supply any excess GBS to other end-users who do not intend to grind the granulate in the UK for sale in the UK. Together this implies that, under the current agreements, Lafarge Tarmac has a restricted ability to influence the price of GBS and GGBS in GB.
- (b) Our analysis of the profitability of Lafarge Tarmac's GBS operations does not suggest that Lafarge Tarmac is earning excess profits in GBS (suggesting that Lafarge Tarmac is not benefiting directly, through its sales of GBS, from Hanson's ability to exercise market power in the GGBS market).
- (c) However, Lafarge Tarmac benefits from higher GGBS prices (i) because the price it obtains for GBS from Hanson is proportional to the price of GGBS achieved by Hanson, and (ii) indirectly through its impact on prices in the cement market. Therefore, even if Lafarge Tarmac had the ability to do so, it would have limited incentives to seek to introduce more competition in relation to either GBS or GGBS.

8.483 Overall, this evidence leads us to the conclusion that Hanson has the ability to exercise significant market power in the supply of GGBS in GB.

8.484 Hanson's ability and incentive to exercise significant market power in the supply of GGBS in GB is likely to result in prices of GGBS in excess of what we would expect in a well-functioning market. Hanson's exercise of significant market power in the supply of GGBS is also likely to result in prices in the GB cement markets higher than they would otherwise be in those markets, as a result of the substitution effect noted in paragraph 8.494 below. In addition, Hanson and Lafarge Tarmac are both active as two of the Top 3 GB cement producers, which further contributes to their incentives to keep the exclusive agreements in place and to maintain high prices of GGBS, given the interrelationship between GGBS prices and cement prices.

8.485 We therefore conclude that the following features of the GB cement markets combine to give rise to an AEC in the market for the supply of GGBS in GB (the AEC in GGBS) as well as for the supply of cement in GB (the GGBS-related AEC in cement), resulting in higher prices for GGBS and for cement than might otherwise be the case:

- (a) The extensive participation of Lafarge Tarmac and Hanson in both the GGBS supply chain on the one hand, and the GB cement markets on the other, whereby Lafarge Tarmac and Hanson are two of the Top 3 GB cement producers and between them own all of the GBS and GGBS plants in GB.
- (b) Lafarge Tarmac's entering into and maintaining a series of exclusive long-term agreements with GB steel producers for the supply by the GB steel producers of all of their BFS, from which, when water-cooled, Lafarge Tarmac produces GBS.
- (c) Lafarge Tarmac's and Hanson's entering into and maintaining a series of exclusive long-term agreements with each other for the supply by Lafarge Tarmac to Hanson of all of the GBS produced in GB intended for cementitious use in GB, as a consequence of which Hanson is responsible for all GGBS production in GB.

8.486 We note that the second and third of these features can be considered together, and can be regarded as conduct by which Lafarge Tarmac and Hanson have acted (separately and together) to secure control of the supply chain for all GGBS produced in GB.

8.487 In paragraph 8.439 above, we noted that the CC has the jurisdiction to find an AEC, not only in a market for goods or services that are specified in the reference under section 131(1) of the Act (a 'relevant market'), but also in a related market (such as a market upstream or downstream of a relevant market), provided that the effects on competition concerned are caused by a feature of a relevant market. As regards the three features identified in paragraph 8.485, we note that:

- (a) the structural link consisting in the participation of Lafarge Tarmac and Hanson in both the GGBS supply chain and in the cement markets (given that GGBS is both an input into blended cement and a partial substitute for CEM I), amounts to a structural feature of the GB cement markets within section 131(2)(a) of the Act;
- (b) the conduct of Lafarge Tarmac in entering into and maintaining a series of agreements with the GB steel producers amounts to a conduct feature of the GB cement markets within section 131(2)(b) of the Act; and
- (c) Lafarge Tarmac's and Hanson's entering into and maintaining a series of agreements for the supply of GBS similarly amounts to a conduct feature of the GB cement markets within section 131(2)(b) of the Act.

8.488 We consider there to be material customer detriment arising from the AEC in the GGBS market and the GGBS-related AEC in the cement market which we identified. As set out in paragraph 8.485, we expect these AECs to result in customer detriment in the form of both higher GGBS prices; and higher cement prices.

8.489 We now set out (a) our estimate of the detriment arising from high GGBS prices, and (b) a description of the mechanism by which the GGBS-related AEC in the cement market gives rise to higher cement prices (having set out our estimate of the detriment arising from high cement prices in paragraphs 8.412 to 8.416 above).

Quantification of the detriment arising from high GGBS prices

8.490 A standard approach to assessing the detriment associated with high GGBS prices is on the basis of industry profitability. Thus excess profits earned by Lafarge Tarmac and/or Hanson in the supply of GBS and GGBS in GB provide a measure of the amount by which GGBS prices are above the level that would prevail in a well-

functioning market, with a consequent detriment to customers of GGBS and of other products in which GGBS is incorporated (such as cement and RMX, as discussed further below).

8.491 We analysed the profitability of Hanson's GGBS operations and of Lafarge Tarmac's GBS operations, as set out in paragraphs 7.281 to 7.284 and in Appendices 7.16 and 7.17. We did not find evidence of excess profitability in Tarmac's (now Lafarge Tarmac's) GBS operations: our analysis of Tarmac's GBS profitability showed that the returns on capital employed are broadly in line with the estimate of Tarmac's cost of capital that has been previously used when assessing the profitability of cement (10 per cent). In contrast, we found that Hanson's GGBS profitability was considerably in excess of the cost of capital for each year in the period 2007 to 2012. Using our analysis of Hanson's profitability, we estimated that the overcharge in GGBS prices was of the order of £[10–15] per tonne for the period 2007 to 2012. We estimate the detriment associated with high GGBS prices to be of the order of £15–20 million a year on average for the period 2007 to 2012. Details of our calculations are set out in Appendix 8.7.

8.492 We noted that, in recent years, some of the excess profits that we identified may have been sustained partly because of capacity constraints on the production of GGBS, though as we set out above, we considered that a substantial part of these profits were derived as the result of the exercise of market power by Hanson in the supply of GGBS, in particular given the evidence of GBS stockpiles and the evidence that Hanson was able to price discriminate according to customers' willingness to pay. We also noted that the period for which we estimated this detriment (2007 to 2012) included a very severe and prolonged economic downturn. One consequence of the downturn was a reduction in the demand for construction materials including GGBS. This decline in demand is likely to result in depressed returns and therefore an underestimate of the harm to customers that would be avoided by the introduction of effective measures to remedy the AEC in the GGBS market and the GGBS-related AEC in the GB cement markets. Overall, therefore, we considered that our estimate of overcharging for GGBS was a reasonable approximation of the average annual detriment associated with high GGBS prices over a full business cycle. This is discussed further in Section 13.

Mechanism by which the GGBS-related AEC in the cement market leads to higher cement prices

8.493 As explained above, we expect the GGBS-related AEC in the cement markets to result in customer detriment in the form of higher cement prices. This is part of the estimate of detriment from high cement prices that we set out in paragraphs 8.412 to 8.416. In this subsection, we distinguish two distinct ways in which cement prices are increased:

- Substitution effect: because GGBS is a partial substitute for CEM I, a higher GGBS price is also likely to result in higher CEM I prices (this depends on the nature of competition in the cement market—see below).
- Component effect: GGBS is a component of pre-blended cements (CEM II and CEM III), as opposed to CEM I which may instead be blended with GGBS (or PFA) at a downstream RMX production site.³⁶³

³⁶³ In the remainder of this subsection, when we refer to RMX production, we mean all downstream use of cement in the manufacture of building products for onward sale.

Substitution effect

8.494 GGBS is a partial substitute for CEM I. The fact that the price of GGBS is higher than it would be in a well-functioning market is also likely to result in higher equilibrium prices for CEM I because the strength of the constraint on CEM I prices from substitution to GGBS will be less if GGBS prices are high. The strength of the impact will depend on:

- The nature of competition in the cement market: if there is a lack of competition between cement producers, prices of outside options/less perfect substitutes will affect the equilibrium prices more than if there is some degree of competition in the cement market. Therefore the less prices of cement are constrained by competition within the cement market, the stronger the impact of higher GGBS prices on CEM I prices.
- The elasticity of substitution between CEM I and GGBS: for a given GGBS price, the closer the substitution between CEM I and GGBS, the stronger the impact of the GGBS price on CEM I prices.

8.495 As set out in paragraphs 8.429 to 8.432, we concluded that there was coordination in the GB cement market among Cemex, Hanson and Lafarge, giving rise to an AEC in the cement market. Given this lack of competition in the cement market, we therefore consider that the additional impact of lack of competition in the GGBS market, and high prices of GGBS which would result from Hanson's market power, is likely to result in CEM I prices being higher than they would otherwise be if GGBS was a well-functioning market.

8.496 To the extent that cement prices rise as a result of the substitution effect described above, we would expect such higher prices to result in higher profits for GB cement producers. As such, part of the customer detriment that we have found to be associated with high cement prices (see paragraphs 8.412 to 8.416) may be attributed to the competition shortcomings in the GGBS supply chain and their consequent distortion of cement markets, rather than from coordination in cement. While we cannot separate the effect of coordination from the effect arising because of shortcomings in competition in the GGBS supply chain, we consider that most of the detriment as measured by our cement profitability analysis is likely to result from the coordination AEC which is the more direct effect on cement profitability. The impact of higher GGBS prices on cement profitability is, in our view, less substantial, although nonetheless significant.

Component effect

8.497 As set out above, RMX is generally produced using as an input either pre-blended cements (CEM II and CEM III) or CEM I and GGBS or PFA blended at the RMX site. Therefore, higher prices of GGBS will result in higher costs of cement inputs to RMX producers, whether these producers purchase pre-blended cements or blend cement on site. Both of these cement-related detriments are captured by the calculations in Appendix 8.7.

9. Competitive assessment: RMX

Introduction

- 9.1 As set out in paragraph 5.102, we have defined a single relevant product market for RMX, including all specifications of RMX, RMX supplied from fixed plants and site plants and concrete supplied from volumetric trucks. We found that RMX markets were highly localized in nature, with narrow catchment areas within about 8 to 10 miles of RMX plants, albeit with some scope for variation in catchment area according to local factors and the means of distribution.
- 9.2 In this section, we set out our assessment of whether there are features that give rise to one or more AECs in the GB RMX markets through unilateral market power or coordination (see paragraph 4.20). As explained in Section 4, much evidence is relevant to consideration of both unilateral market power and coordination and we therefore present our assessment of the scope for unilateral market power and coordination together in a single section of this report.
- 9.3 Paragraphs 4.25 and 4.28 contain key extracts from the Guidelines on how the CC will conduct its assessment of unilateral market power and coordination. In light of the Guidelines, to conduct our assessment of whether unilateral market power or coordination may be giving rise to one or more AECs in GB RMX markets, in this section we analyse:
- (a) aspects of market structure;
 - (b) market outcomes; and
 - (c) the impact of recent market developments (see paragraphs 4.35 to 4.37).¹
- 9.4 We conclude this section by setting out our competitive assessment of the GB RMX markets in light of this analysis.

Market structure

- 9.5 In this subsection, we look at several aspects of the structure of RMX markets in GB that are relevant to our assessment of the possible existence of unilateral market power or coordination in these markets:
- (a) shares of supply at GB and county level;
 - (b) the characteristics of RMX customers and their purchasing behaviour; and
 - (c) the extent of barriers to entry and expansion in RMX markets.
- 9.6 GB RMX markets are characterized by considerable vertical integration from aggregates and cement into RMX production (see paragraphs 2.78 to 2.80). We assess the availability of cement and aggregates as inputs for RMX production as part of our assessment of barriers to entry and expansion in RMX markets (see paragraphs 9.45 to 9.53). Our assessment of the impact of vertical integration on competition more broadly is set out in Sections 8 and 10.

¹ To the extent that companies' conduct in GB RMX markets was relevant to our assessment, this was covered as part of our assessment of market structure, market outcomes and market developments.

Shares of supply at GB level

9.7 We examined shares of supply of RMX in GB as a whole to understand the position of the key market players overall.

9.8 Table 9.1 shows the pre-2013 Majors' shares of supply of RMX in GB (ie before the creation of Lafarge Tarmac and the entry of HCM into the relevant markets), alongside the total share of supply held by the non-Majors. The table shows that the pre-2013 Majors collectively supplied 66 per cent of RMX in GB, based on 2011 volumes and including volumetric trucks.

TABLE 9.1 Pre-2013 Majors' and non-Majors' shares of supply of RMX in GB in 2011

	<i>per cent</i>						
	<i>Aggregate Industries</i>	<i>Cemex</i>	<i>Hanson</i>	<i>Lafarge</i>	<i>Tarmac</i>	<i>Total pre-2013 Majors</i>	<i>Total non-Majors</i>
Total GB	[10–12]	[16–18]	[16–18]	[6–8]	[14–16]	66	33

Source: CC, based on BDS data for 2011 including volumetric trucks.

9.9 Table 9.2 shows the 2013 Majors' shares of supply of RMX in GB (ie following the creation of Lafarge Tarmac, the entry of HCM into the relevant markets), alongside the total share of supply held by the non-Majors. The table shows that the 2013 Majors collectively supply 66 per cent of RMX in GB (including volumetric trucks), just as the pre-2013 Majors did.

TABLE 9.2 2013 Majors' and non-Majors' shares of supply of RMX in GB in 2011

	<i>Aggregate Industries</i>	<i>Cemex</i>	<i>Hanson</i>	<i>Lafarge Tarmac</i>	<i>HCM</i>	<i>Total Majors</i>	<i>Total non-Majors</i>
Total GB	[10–12]	[16–18]	[16–18]	[8–10]	[12–14]	66	33

Source: CC, based on BDS data for 2011 including volumetric trucks; assuming total volumes divested to HCM of 2,800m³; as reported by Anglo-American and Lafarge to the CC during the Anglo-Lafarge remedies process.

9.10 We obtained more recent data on market shares for the supply of RMX in GB in 2012, which is set out in Table 9.3. These estimates suggest an increase in the share of supply of RMX by non-Majors in 2013; part of which is likely to be a consequence of the Breedon Aggregates acquisition of some of Aggregate Industries' assets in Scotland (see paragraph 3.12).

TABLE 9.3 2013 Majors' and non-Majors' shares of supply of RMX in GB in 2012

	<i>Aggregate Industries</i>	<i>Cemex</i>	<i>Hanson</i>	<i>Lafarge Tarmac</i>	<i>HCM</i>	<i>Total Majors</i>	<i>Total non-Majors</i>
Total GB	[8–10]	[14–16]	[16–18]	[8–10]	[12–14]	63.7	36.3

Source: CC, based on BDS data for 2012 including volumetric trucks.

Note: These estimates assign ownership of RMX plants at the time of writing the report (September 2013), and therefore Lafarge Tarmac and Hope are shown, although this structure started in January 2013. Similarly, the Breedon Aggregates assets recently acquired from Aggregate Industries in Scotland (see paragraph 3.12) are assumed to be under Breedon Aggregates ownership in these estimates.

9.11 RMX markets are local (see paragraph 5.104), and it is local concentration that is key to any assessment of the scope for unilateral market power or coordination in specific local markets. Given that in our initial assessment we have not found any significant evidence on barriers to entry and expansion in RMX (see paragraph 9.53), and in

light of limited time and resources, we did not have reason to analyse local RMX markets in detail. However, to understand in general terms the possible extent of concentration in RMX production in different parts of GB, we examined shares of production at county level:²

- (a) In terms of the Majors' individual shares of supply, in 2010, the highest RMX share held by any Major in a county was 56 per cent. Not all Majors had RMX operations in all counties, and two Majors had no RMX operations in over a third of counties. Several non-Major RMX producers had shares of production in individual counties in the range of 22 to 42 per cent. However, we noted that the larger non-Major producers tended not to be present (or to have only a small share of production) in those counties where total RMX production was high.
- (b) In terms of the Majors' collective share of supply, of the 64 counties in GB, the Majors collectively had a share of 100 per cent of production in six counties; and the Majors collectively had a share of more than 50 per cent of production in 51 counties.

- 9.12 There were around 194 non-Major RMX suppliers in GB in 2011, operating around 352 RMX plants. In addition to this, there were around 183 volumetric truck operators in 2011 (some of which overlap with the RMX suppliers), operating around 206 volumetric trucks.³ Most independent RMX producers are small, with many operating only one site (1.81 sites on average); in comparison, the five Majors operated 781 RMX plants collectively. Non-Majors' sites tend to be smaller than Majors' sites on average; as shown in Figure 9.1 below, the Majors tend to have a higher concentration of the larger RMX sites than the non-Major RMX producers.⁴

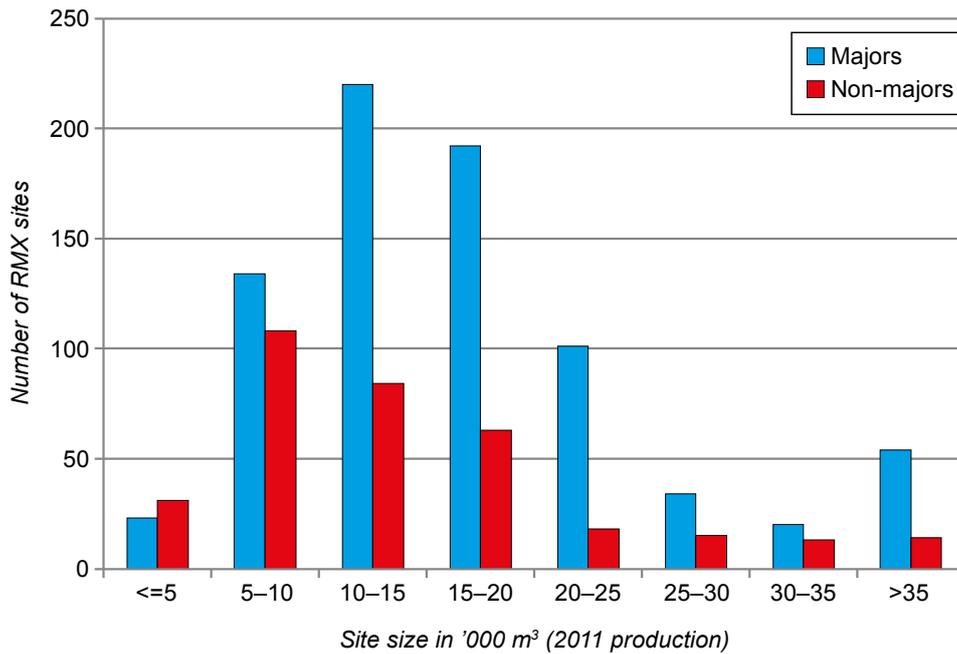
² Source: BDS data. There are a total of 64 counties in GB. Local markets for RMX would be likely to be smaller than these counties.

³ Source: BDS data

⁴ The mean volume production by site, according to BDS data in 2011, was 19,000 m³ for sites operated by the Majors versus 15,000 m³ for sites operated by non-Majors.

FIGURE 9.1

Distribution of Majors' and non-Majors' RMX sites by size



Source: BDS data, CC analysis.

RMX customers and their purchasing behaviour

Characteristics of RMX customers

9.13 The large majority of RMX customers purchase RMX on a project base; there are very few fixed outlet customers. However, the size and type of project for which RMX is purchased, and the type of customers, varies widely. Table 9.4 sets out, for each Major's RMX business, the top 10 customer types by amount purchased in 2011. This shows that there are many different types of customer for RMX and uses of RMX.

TABLE 9.4 Top 10 customer types by total amount purchased, 2011

Rank	RMX customer types			
	Cemex	Hanson	Lafarge	Tarmac
1	Large civils frame & flooring	[X]	Building contractors	Building/civil engineering
2	Regional specialists	[X]	Civil engineering contractors	Building contractor
3	Ground workers	[X]	Ground worker	Ground worker
4	Large contractors & house builders	[X]	Cash sales	Concrete frame contractor
5	Local builders	[X]	Specialist contractors	Piling
6	Regional builders	[X]	Builders' merchants	Flooring specialist
7	Small civils	[X]	Specialist flooring contractors	Utility contractor
8	Small builders & DIY	[X]	Precast producers	Private/cash sales
9	Builders merchants	[X]	Piling contractors	Builders' merchants
10	Farmers	[X]	Cable and utility contractors	Ground stabilization

Source: CC analysis of parties' transaction data.

Note: [X] In this table the ranking refers to customers for whom we know the type, excluding customers with unknown type, even though those customers account for a large part of the Majors' sales.

9.14 Table 9.5 sets out the distribution of Majors' RMX customers by amount purchased in 2011. We see that customers purchasing 1,500m³ or more of RMX per year account for the majority of revenue of all of the Majors in 2011.

TABLE 9.5 Distribution of RMX customers by amount purchased, 2011

Size band	Share of all purchases, per cent				
	Aggregate Industries	Cemex	Hanson	Lafarge	Tarmac
<3m ³	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
3–15m ³	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
15–45m ³	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
45–200m ³	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
200–1,500m ³	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
>1,500m ³	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of parties' transaction data.

9.15 Table 9.6 measures the concentration of RMX customer base, by showing the percentage of each Major's total RMX sales accounted for its top 50 customers. We see that, in contrast to cement and aggregates, the customer base for RMX is relatively fragmented, with the top 50 customers accounting for around 20 per cent or less of three of the Majors' RMX sales, but with higher concentration in the customer base for the other two Majors.

TABLE 9.6 Percentage of sales accounted by top 50 customers, 2011

	Share of all purchases, per cent				
	Aggregate Industries	Cemex	Hanson	Lafarge	Tarmac
Top 50 customers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of parties' transaction data.

Purchasing behaviour

9.16 Lafarge told us that it did not publish prices for RMX. All prices were given in a quotation which was personal to each particular customer and would be specific to a particular delivery or collect location (except for a very limited number of customers who might have prices specific to a slightly wider geographic area—such as a city or district).

9.17 Lafarge said that although formal tenders were comparatively rare, its RMX customers (typically building contractors, civil engineering companies and other specialists) invariably operated a less formal tender process to secure the best supply. Typically, when a contractor was bidding for work on a particular project, it would request quotations for material prices from Lafarge and other suppliers in order to establish costings for its bid. Once the project or sub-project had been awarded to the winning contractor or subcontractor, it would then enter negotiation with the various suppliers giving each the opportunity to beat the lowest price received. This negotiating process might be repeated more than once.

9.18 Lafarge said that where it had entered into partnering arrangements with major customers to supply major public schemes, the material supply to partner companies was still subject to formal or informal retendering which partner companies would undertake to 'market test' the prices they received from Lafarge.

- 9.19 Tarmac told us that 'formal tenders' tended to be received in relation to work in either the public sector or for larger contracts. In the public sector this type of approach was common among local authorities where they were looking to secure supplies of materials for use in highways maintenance over a set period (typically 12 months or more). Formal tenders might result in a contract award based on sealed bids (usual in the public sector) or might be a means to move through to a more detailed negotiation on a 'preferred supplier' basis with the customer/client.
- 9.20 Tarmac said that written/verbal enquiries were the basis for the majority of quotations issued by it. Customers approached Tarmac with the basic details of their requirements, and Tarmac responded to such an enquiry with a quotation. Larger volumes would be pursued through Account Managers with the Internal Sales team taking responsibility for smaller volumes. However, due to prioritization of limited sales team resources, a large number of small-volume quotations were not followed up by Tarmac unless the customer proactively approached the business.
- 9.21 Published price lists were not common practice within the sector. Tarmac told us that it published price lists only for cash sale customers (ie customers that did not have an account with Tarmac) calling directly at one of Tarmac's plants to collect material. Each plant would hold a list of site-specific cash sale prices.
- 9.22 [X] told us that it tailored the way in which it marketed its products and negotiated for new work according to the type of customer and type of work it was hoping to secure. It said that it differentiated between major projects, non-major projects and casual sales of RMX.
- 9.23 In relation to major projects, [X] told us that it invested resources in tracking possible projects and often would seek early engagement with the client. It would sometimes seek to identify and align itself with the contractor that it judged had the best chance of winning the end-customer contract. Almost all major projects were tendered either to construction contractors or directly to material producers. If the project was tendered to construction contractors, these contractors in turn would often tender the supply of RMX. More commonly, however, the construction contractor and the materials suppliers would team up before submitting a bid. As a starting point for negotiation on most major contracts, [X] used an internal price list set on a regional basis. The RMX price lists reflected a plant mix cost plus a margin with an increment added for the standard cost of haulage. The price lists were not published. Together with these lists, [X] circulated instructions on the level of discount that certain grades of sales staff were authorized to agree off the list prices.
- 9.24 In relation to non-major projects (including national, regional and local construction companies), [X] said that these projects constituted the bulk of its work. [X] would be approached by construction contractors at a local level to quote for the potential supply of RMX to a specific project. It would also try to identify other construction companies that were likely to be bidding and to offer to quote for supply of the relevant material. It typically negotiated contracts for the supply of aggregates and RMX to non-major projects on a bilateral basis. Formal tendering was less common, although some larger customers would engage in a formal tender process, despite the overall quantities procured being relatively small. The [X] sales team would typically provide a construction contractor with a quote based on the price lists. The prices contained in the various local price lists were the starting point for negotiations between [X] and the customer.
- 9.25 Casual customers could often be drop-in sales, often called cash sales. They could also be cash delivery of a low volume of RMX (minimix). [X] used a different price list for drop-in cash sales than it did for delivered sales. It also had a separate price

list for minimix deliveries. The purchaser would pay a price commensurate with the relatively specialized nature of the product and small load size they required.

- 9.26 Hanson told us that formal tenders might be run by public sector purchasers, customers who were required to undergo tendering procedures and other customers for big projects. Hanson told us that whilst formal tenders represented a relatively low proportion of RMX customers (albeit a higher proportion of volumes as larger jobs were generally subject to formal tenders), most customers conducted informal tendering or testing the market in order to secure the best price and processes.
- 9.27 Hanson said that RMX customer purchasing patterns typically had the characteristics of classic spot purchasing, including: purchasing on a job-by-job basis; showing little loyalty to existing suppliers (where relevant); seeking quotes from multiple suppliers; and choosing a supplier largely on price.
- 9.28 Hanson told us that some of the factors relevant for the determination of the price which it was prepared to offer new and spot customers or the final price offered to existing customers following a price negotiation included: the location of the customer; quality and technical considerations; and the likely volumes to be purchased by the customer and the extent to which higher volumes led to cost savings for Hanson.
- 9.29 In relation to prices, Hanson said that prices were generally individually negotiated. [REDACTED] Hanson only used externally available price lists for ad hoc sales to customer who purchased on a cash basis, and these accounted for a small proportion of its total sales.⁵
- 9.30 Cemex told us that customers would generally obtain quotations from a number of RMX suppliers before placing an order. Cemex RMX's sales were made through a range of different customer interactions, from a large number of straightforward verbal or written enquiries, through to requests to complete short tender sheets or a full formal tender process.
- 9.31 In relation to formal tenders, Cemex said that the UK RMX industry tended to have two main stages of quotation or tendering before an order was confirmed. The first stage was where a number of building/construction contractors tendered for a particular job with an end-client. Quotations provided by Cemex to the contractors at this stage were normally indicative to help the contractor to provide a quotation to the end-client. Cemex was not always asked to provide quotes to all potential contractors on a bid but in principle would provide a quote to any of the tendering contractors that requested one. At the second stage, the end-client would have determined a smaller number of building/construction contractors to continue to tender based on their own selection criteria. If a contractor to which Cemex had provided a quotation in the first stage remained in the process, Cemex would typically be asked to resubmit a further quotation to that contractor. The contractor would typically seek a number of competitive quotes from different RMX suppliers again at this stage.
- 9.32 Cemex also told us that Cemex RMX did not use published price lists for RMX supplied in the UK.

⁵ Hanson told us that the proportion of customers who paid the 'list price' was low—for example, only around [REDACTED] per cent of Hanson's supplies of RMX in the North region were to cash customers.

Customers undertaking large projects

- 9.33 Given the evidence of the specialist requirements of some RMX customers undertaking large projects and requiring very large volumes of RMX,⁶ we considered whether such customers might have a more limited choice of RMX supplier than might be indicated simply by considering shares of RMX production locally.
- 9.34 Hanson told us⁷ that many suppliers (both Majors and non-Majors) had the necessary capability to supply such customers, and RMX producers from outside the local area could compete by setting up a site plant.
- 9.35 According to Aggregate Industries,⁸ our concerns about whether large RMX customers had less choice than smaller ones were unfounded because:
- (a) These large customers were small in number and were sophisticated purchasers, well able to protect their own interests.
 - (b) Independents had a wide range of large-capacity and small-capacity RMX plants to meet such customers' requirements.
 - (c) For a small number of very large (and often very high-profile) projects such as [X], security of supply was an issue for customers. Aggregate Industries acknowledged that suppliers with an integrated supply chain and back-up sources of supply would be at an advantage for such projects. However, it also pointed out that it found itself increasingly competing with contractors planning to set up on-site plants for such projects.
 - (d) Large suppliers might be at an equivalent disadvantage when bidding for smaller projects as independent suppliers might be perceived to be more local.
- 9.36 Tarmac told us⁹ that it had seen no evidence that customers requiring large volumes of RMX had a more limited choice of RMX supplier than other customers. In its view:
- (a) Low barriers to expansion meant that small RMX producers could expand to meet the demands of larger customers.
 - (b) Large customers could set up their own site plants.
 - (c) It had seen an increasing use of volumetric trucks and site plants for larger jobs.
- 9.37 Lafarge argued¹⁰ that site plants also competed with fixed RMX plants for large jobs, and that the Majors did not control the rental of RMX site plants. According to Lafarge, RMX suppliers did not have to be in the vicinity of a large project to bid for that project, given the possibility of using a site plant. It noted that customers could also operate site plants themselves. Therefore, in its view, customers requiring large volumes of RMX did not face less choice of supplier than other customers.
- 9.38 Cemex said¹¹ that, due to the volumes involved, there was invariably intense competition for larger projects both from Majors and increasingly from independents.

⁶ [BAM Nuttall hearing summary](#), paragraphs 5 & 6.

⁷ [Hanson response to updated issues statement](#).

⁸ [Aggregate Industries response to updated issues statement](#).

⁹ [Tarmac response to updated issues statement](#).

¹⁰ [Lafarge response to updated issues statement](#).

¹¹ [Cemex response to updated issues statement](#).

According to Cemex, such orders tended to be subject to additional downward pressures on prices given the increased buyer power.

9.39 Our conclusions on competition for customers requiring very large amounts of RMX are set out in paragraph 9.69.

Entry and expansion

9.40 In order to understand the extent to which entry and expansion were able to constrain RMX producers, we examined:

- the extent of past entry and exit into the GB RMX markets; and
- barriers to entry into and expansion in the GB RMX markets.

Further details of our analysis of entry and expansion in RMX markets are presented in Appendix 9.1.

Extent of past entry and exit

9.41 Aggregate Industries and Tarmac provided us with estimates of the total number of RMX sites that were opened and closed in the UK between 2007 and 2010. These estimates are set out in Table 9.7. The table shows that, according to both Aggregate Industries and Tarmac, the Majors accounted for a substantial proportion of the total sites opened and closed.

TABLE 9.7 RMX sites opened and closed in the UK, 2007 to 2010

	<i>Information provider</i>	
	<i>Aggregate Industries</i>	<i>Tarmac</i>
Total sites opened	[X]	133
Sites opened by the Majors	[X]	89
Total sites closed	[X]	204
Sites closed by the Majors	[X]	166

Source: Aggregate Industries, Tarmac.

Note: In both cases the information was based on reports prepared by BDS, and supplemented in the case of Aggregate Industries with its own market intelligence. Possible reasons for the inconsistencies between the information provided by Aggregate Industries and Tarmac are that the submissions do not distinguish between sites and plants, entries and expansions, closure and mothballing or entry and reopening.

9.42 Tarmac also told us that, according to BDS, 23 new RMX suppliers commenced production between 2005 and 2009 and that the share of supply accounted for by local and regional suppliers (not including volumetric trucks) increased from 17 per cent in 2000 to 27 per cent in 2010. Tarmac noted that the Majors made the largest number of exits from RMX.

9.43 These figures are consistent with the share of supply figures in Table 10.1, which indicate that, in terms of share of supply of RMX in GB, the independent and non-integrated suppliers have grown at the expense of the Majors.

9.44 In addition to fixed plants, RMX can be supplied by volumetric operators. It is estimated that the share of sales of RMX by volumetric trucks has increased from 8.2 to

9.9 per cent between 2009 and 2012 (see Table 9.8).¹² Lafarge estimated that, between 2006 and 2010, the share of sales of RMX by volumetric trucks increased from [0–5] per cent in 2006 to [5–10] per cent in 2010 and to [8–9] per cent in 2011.

TABLE 9.8 Growth in volumetric trucks over time

	<i>Market share of volumetric trucks, per cent</i>						
	2006	2007	2008	2009	2010	2011	2012
BDS estimates				8.2	8.9	9.2	9.9
Lafarge estimates	[0–5]	[0–5]	[0–5]	[0–5]	[5–10]	[8–9]	[8–9]

Source: BDS and Lafarge estimates.

Note: BDS estimates are taken from BDS 2009 and 2010 annual reports and BDS data for 2011 and 2012. Lafarge's estimates (submitted in the market questionnaire) are using BDS figures from the same reports for 2009, 2010 and 2011 and the assumption that prior to the recession, new volumetric trucks were being commissioned at a rate of around [0–5] per year (as set out in BDS reports).

Barriers to entry and expansion

9.45 We considered the evidence relating to the following possible barriers:

- capital cost;
- availability of raw material;
- planning permission; and
- barriers to expansion.

9.46 The Majors told us that the capital investment required for RMX production was low. Estimates ranged from £0.1 million for second-hand plant to £1.5–£2 million for a large-scale plant. The Majors also told us that entry into the supply of RMX using volumetric trucks required very little initial capital investment as the trucks could be purchased second-hand or leased. Evidence from volumetric truck operators confirmed that even with associated costs (eg cement silos), the capital costs need not be high. The size of these costs would vary depending on site acquisition costs, scale of entry etc (see Appendix 9.1).

9.47 One concern raised with us was whether independent RMX producers could gain access to supplies of cement and aggregates given that the suppliers might also be competitors in RMX. The Majors told us that independent RMX producers formed an essential customer base for their businesses. They said that aggregates were readily available from a variety of suppliers, given the excess production capacity in aggregates in the UK. We note the findings from our aggregates PCA and EEA analysis that nearly 100 per cent of aggregates customers have more than five aggregates plants with 20 miles for urban job sites and 28 miles for rural job sites, suggesting that there is significant supplier choice available to independent RMX producers (see paragraph 9.19). Hanson also told us that the Majors' networks of aggregates plants and RMX plants were not optimized for self-supply, with the result that individual aggregates plants might be dependent on sales to non-vertically-integrated RMX producers.

¹² BDS estimates; BDS only started estimating volumetric truck shares in 2009.

- 9.48 Similarly, the Majors told us that independent RMX producers formed an essential customer base for cement, and that imported cement was readily available to RMX producers.
- 9.49 We received mixed evidence from medium-sized RMX producers, some saying that access to cement had not been a problem whereas others expressed concern, particularly with respect to the price of cement that went into their RMX (see Appendix 9.1). The International Small Business Alliance (ISBA) told us in its response to our provisional findings that, in practice, construction companies did not have purchasing power—their choice of aggregate and cement suppliers was limited and they had little leverage in negotiating prices. Further, ISBA argued that independent RMX producers were only able generally to operate relatively small facilities because of the risks of margin squeeze and of lack of continuity of cement supplies that they faced, which effectively precluded them from winning more significant contracts. According to ISBA, unlike the Majors, independent RMX producers were not able to cross-subsidize their RMX losses from their other activities. ISBA told us that the Majors were driving the prices of RMX and aggregates, just as they were in cement. ISBA also told us that vertical integration was damaging to independent producers and final consumers as it enabled margins to be squeezed. However, we found evidence that was inconsistent with widespread foreclosure of independent RMX producers in recent years (see Section 10).
- 9.50 We did not receive evidence to indicate that planning permission raised a barrier to entry for RMX plants. We were told that any planning consents required could be obtained within three months of application.
- 9.51 The Majors told us that there were few or no barriers to expansion. They said that, as prevailing levels of capacity use were low, expansion within existing capacity would not be problematic. We were told that, because variable costs constituted the great majority of RMX production costs, no significant increase in fixed costs would be incurred to increase production within existing capacity.
- 9.52 The Majors also told us that there were no significant barriers to increasing the capacity of an existing site. This would be likely to be achieved by replacing the plant with a higher-capacity model. We were told that a revision to the site’s planning consent would probably be required but this would not be costly or difficult.

Conclusions on entry and expansion

- 9.53 We concluded that barriers to entry and expansion in the GB RMX markets were generally low, though this may vary depending on the particular circumstances of local markets. We found that low levels of capital investment were required, there was a lack of economies of scale and there were low regulatory barriers. The use of volumetric trucks enables entry at a small scale with a limited investment. There is little evidence that the terms on which aggregates and cement are available for purchase by RMX producers raises a barrier to entry into the supply of RMX.

Market outcomes

- 9.54 In light of what the Guidelines say on market outcomes that the CC may take into account in its AEC assessment (see paragraph 4.13) and our unilateral market power and coordination theories of harm for RMX (see paragraph 4.20), in this subsection we look at the following outcomes in the GB RMX markets:

(a) profitability; and

(b) margins.

Profitability

- 9.55 We have conducted an assessment of the profitability of the Majors' RMX operations across GB in accordance with our profitability framework as set out in Appendix 4.1. Appendix 9.2 also sets out our detailed results and our interpretation of RMX profitability in GB.
- 9.56 We assess the Majors' profitability by comparing their ROCE¹³ with their cost of capital. We calculated their ROCE by using accounting information prepared on a (modified¹⁴) HCA basis, the basis on which the Majors routinely prepare their financial information. We have not analysed profitability on a CCA basis as we have been able to infer that such an analysis would not alter our conclusions.¹⁵
- 9.57 ROCEs based on the Majors' own valuation of their assets (modified) HCA basis suggest that the generally large ROCEs in 2007 have deteriorated a great deal since that time. As set out in Table 9.9, the Majors taken together have been loss-making since 2008 and each has been loss-making from 2009 up to and including 2011 albeit with some variation across the individual Majors. This finding suggests that it would be in the economic interest of at least some of the Majors to rationalize further the number and/or location of their RMX sites, so that their remaining portfolio of sites becomes profitable on a sustainable basis.

TABLE 9.9 Calculated ROCE for each Major on an HCA basis over the period 2007 to 2011

	<i>Profit/capital employed, per cent</i>				
	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>
Cemex	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]
Lafarge	[X]	[X]	[X]	[X]	[X]
Overall	0.7	(5.1)	(25.2)	(33.6)	(27.5)

Source: CC analysis based on Appendix 9.2, Tables 3(a) to (e).

Margins

- 9.58 Appendixes 6.5 and 6.6 describe our analysis of the cost structures and the profit margins of the RMX operations of the Majors and of the medium-tier independents.
- 9.59 Our analysis of the cost structures of the Majors' and medium-tier independents' RMX divisions showed that variable costs accounted for the highest proportion of their total costs, where variable costs predominantly comprised the costs of raw material inputs, ie aggregates and cement. Therefore the prices at which the Majors' RMX businesses purchase aggregates from their own upstream operations (known as transfer prices) will have a significant effect on the apparent profitability of their RMX businesses, and the margins being made. As set out in paragraphs 6.85 and 6.86, Hanson and Tarmac told us that they transferred aggregates to their down-

¹³ ROCE is a measure of profitability. For this purpose it is measured as the operational profit for a period divided by the value of the operational net assets relevant to the same period expressed as a percentage.

¹⁴ Some Majors have revalued some of their fixed assets.

¹⁵ See Appendix 9.2, paragraph 26.

stream RMX businesses at higher prices than they sold aggregates externally, and the other Majors told us that they transferred aggregates internally at market prices.

- 9.60 Our analysis shows that, for each Major, RMX margins (at divisional level) have eroded over the period 2007 to 2011—with price increases being outpaced by growth in variable costs. However, these margins are lower for [redacted] and [redacted] due to their higher internal aggregates transfer pricing policy. Adjusting for this, their RMX margins improve considerably.¹⁶ Our analysis also shows that the ‘mid-tier’ RMX producers have also faced margin erosion, driven by a combination of price erosion and upward cost pressures.
- 9.61 We also compared the costs of aggregates and cement per cubic metre of RMX between the Majors and a selection of the medium-tier independents. We found that the cost of aggregates for the medium-tier independents was broadly within the range of the costs incurred by the Majors. However, we found that whilst the cost of cement per cubic metre of RMX was broadly similar for all the Majors, there was far greater variation for the medium-tier independents we looked at. Our analysis of cost structures for the Majors’ and medium-tier independents’ RMX divisions are set out in Appendices 6.5 and 6.6.

Market developments

- 9.62 The impact of the formation of Lafarge Tarmac and the entry of HCM on shares of supply of RMX at GB level may be seen by comparing Tables 9.1 and 9.2¹⁷.
- 9.63 Prior to the formation of Lafarge Tarmac and the divestitures required by the CC, Lafarge had [redacted] RMX plants (of which [redacted] were mothballed) producing [redacted] million m³ of RMX (2010 figures). Tarmac had [redacted] plants (of which [redacted] were mothballed) producing [redacted] million m³ of RMX (2010 figures). Lafarge Tarmac now has [redacted] RMX plants (of which [redacted] were mothballed as at 1 May 2012) producing [redacted] million m³ of RMX (2010 figures) and HCM has [redacted] plants producing just over [redacted] million m³ of RMX (2010 figures).¹⁸
- 9.64 There has therefore been little overall change in terms of consolidation in shares of supply of RMX at GB level as a result of the formation of Lafarge Tarmac and the entry of HCM. The number of major RMX producers is unchanged, as is the combined share of supply at GB level of the four UK cement producers and of the five Majors. Assuming similar overall levels of capacity utilization, Lafarge Tarmac has a GB share of RMX supply similar to that held by Lafarge prior to divestiture, and HCM has a similar share to that held by Tarmac prior to divestiture (although Lafarge Tarmac and HCM both now own a combination of former Lafarge and Tarmac RMX plants).
- 9.65 At a local level, it was not possible to repeat our county-level analysis of RMX concentration with the data available to us, as this analysis relied on county-level produc-

¹⁶ We calculated the ‘financial impact’ for each Major of its aggregates transfer prices, by multiplying the difference between average internal and external prices for primary aggregates (further split into seven product subcategories, eg crushed rock graded and crushed rock dust, etc) for that Major by the internal volumes of that product subcategory. In calculating divisional margins, this financial impact should correctly be allocated to the aggregates division if internal prices are the same as market prices, whereas this financial impact should be allocated to the RMX division if internal prices are higher than market prices. If it is assumed that internal prices are set higher than external prices on a like-for-like basis, then this would result in an RMX margin enhancement of [redacted] per cent for [redacted], and [redacted] per cent for [redacted].

¹⁷ The following discussion does not reflect the sale by Aggregate Industries of a number of RMX operations (and asphalt, aggregates and concrete block operations) in Scotland to Breedon Aggregates in April 2013. This transaction was referred by the OFT to the CC on 24 September 2013. We do not consider that this market development alters the overall conclusions of our assessment of competition in the GB RMX markets.

¹⁸ A further five RMX plants were sold to purchasers other than HCM.

tion figures which were not broken down by individual plant. However, it is possible that the formation of Lafarge Tarmac and the entry of HCM may have resulted in high concentration in slightly more local RMX markets than beforehand (eg where a local overlap was considered unproblematic during the CC's Anglo–Lafarge JV inquiry, or where the remedy required by the CC as a result of its Anglo–Lafarge JV inquiry did not require divestment of the entire overlap). However, the CC in its Anglo–Lafarge JV report did not expect any such increases in local concentration to give rise to competitive harm, once the divestitures had been implemented.

Our assessment

- 9.66 As set out in paragraphs 4.20 and 4.21, we assessed whether features of GB RMX markets gave rise to one or more AECs as a result of unilateral market power or as a result of coordination.
- 9.67 Our analysis indicates that:
- (a) Whilst the Majors collectively supply 66 per cent of RMX at GB level, the extent of concentration in local markets for RMX appears to be limited.
 - (b) The customer base for RMX is relatively fragmented; RMX customers tend to purchase on a project basis.
 - (c) Whilst not all local RMX producers may be able to supply customers requiring very large volumes of RMX for a particular project, such customers are also likely to have some purchaser power, and have other options such as tendering for (or self-supply through) an RMX site plant. RMX suppliers may not have to be in the vicinity of such a project to bid for it.
 - (d) Barriers to entry and expansion are low.
 - (e) The generally large ROCEs in 2007 by the Majors in their RMX operations have deteriorated a great deal since then and that the Majors' RMX operations taken together had been loss-making from 2008 up to and including 2011.
 - (f) For each Major, RMX margins (at divisional level) have eroded over the period 2007 to 2011, and the 'mid-tier' RMX producers have also faced margin erosion.
 - (g) There has been little overall consolidation in shares of supply of RMX at GB level as a result of the formation of Lafarge Tarmac and the entry of HCM, and we had limited concerns about the impact of these market developments on concentration in local markets.

Unilateral market power

Parties' views

- 9.68 The Majors told us that there was no unilateral market power in any GB RMX market. In particular:
- (a) Aggregate Industries told us¹⁹ that RMX customers had a choice of suppliers and returns were under substantial pressure. It said that RMX demand was shrinking

¹⁹ [Aggregate Industries response to updated issues statement](#).

in a very competitive market, and that independent producers could compete for [8] per cent or more of Aggregate Industries' sales.

(b) Hanson said that independent RMX producers competed with it in every RMX market. It told us²⁰ that RMX markets were highly competitive for the following reasons:

- There were multiple suppliers (Majors, independents and volumetric truck operators).
- Volumetric trucks could supply outside their local area, as the RMX was produced on site.
- Barriers to entry and expansion were low.
- Independent producers had increased and continued to increase their share of supply and capacity, during a time of depressed demand and reduced capacity of the Majors.

(c) Lafarge said²¹ that there was dynamic competition in the supply of RMX in all local markets, in particular due to:

- competition from a large number of other national and local RMX producers;
- significant excess capacity in the hands of competitors, which could be utilized should any producer seek to increase prices;
- relatively low costs of entry into the production of RMX; and
- competition from volumetric trucks.

Assessment

9.69 Given the indications that the extent of concentration in local markets for RMX may be limited, the lack of barriers to entry, the ease with which existing suppliers of RMX could expand their output and the relatively poor performance of the RMX businesses we analysed, we found that widespread unilateral market power in the GB RMX markets was unlikely. We found little evidence that competition for customers requiring very large volumes of RMX for particular projects would be less effective than competition for other customers.

Coordination

Parties' views

9.70 The Majors told us that there was no coordination in any GB RMX market. Aggregate Industries said that the market conditions necessary to sustain tacit coordination were not met. In particular, it told us that there would be no ability to reach and monitor coordination because of the lack of homogeneity of the products supplied, the fact that customers had a wide choice in many local markets, and that there was no symmetry in market shares or cost structures among suppliers. It also told us that

²⁰ [Hanson response to updated issues statement.](#)

²¹ [Lafarge response to the issues statement.](#)

there was no internal ability to sustain coordination because it had significant excess capacity which gave it a strong incentive to seek additional business and because barriers to switching were low. Finally, it said that coordination would not be externally sustainable because of the low barriers to entry and countervailing buyer power.

Assessment

- 9.71 Taking into account what the Guidelines say regarding the assessment of whether coordination is giving rise to an AEC (see paragraphs 4.28, 8.203, 8.204, 8.239 and 8.273), the supply of RMX in GB appeared to have fewer structural features than in the case of aggregates or cement that might give rise to concerns about coordination. There was some evidence that the Majors collectively held a high market share in some local RMX markets (see paragraph 9.11). However, the lack of barriers to entry and expansion into RMX supply (see paragraph 9.53), the complexity of maintaining coordination in multiple local RMX markets, the declines in the profitability of the Majors' RMX operations since 2007 coupled with the erosion of their margins (at divisional level) meant that we found that widespread coordination in the GB RMX markets was unlikely.

RMX competitive assessment: conclusions

- 9.72 Overall, we did not find evidence indicating widespread problems across multiple local RMX markets (whether as a result of unilateral market power or coordination). Given the lack of concerns raised by our analysis and given constraints on the time and resources available for our investigation overall, we did not carry out further analysis of individual local markets for RMX. We have not identified any features giving rise to an AEC in any market in GB for the supply of RMX through unilateral market power or coordination.
- 9.73 We considered that recent market developments (see paragraphs 9.64 and 9.65) did not have a material impact on our competitive assessment of the GB RMX markets.

10. Vertical integration and its effects on competition

- 10.1 Aggregates and cement are key inputs into the supply of RMX. Some of the largest companies involved in these sectors are vertically integrated, and some have become more vertically integrated in recent years as a result of acquisitions (see Appendix 3.2). Notably, the four GB cement producers also have significant aggregates and RMX operations: together, these four cement producers accounted for [about 55] per cent of the share of supply of primary aggregates in GB, and about 66 per cent¹ of the share of supply of RMX in GB. Other companies have both aggregates and RMX operations and may be involved in the importation of cement. Aggregate Industries in particular has significant aggregates and RMX operations in GB and is owned by a major European cement producer, Holcim Ltd.
- 10.2 In addition to the increased vertical integration in the sector as a result of various acquisitions, there has been a trend in the past five years for the Majors to increase the amount of cement that is sourced internally by their RMX operations (as opposed to purchases from other GB cement producers—see Appendix 2.3). For aggregates, there has not been a similar trend, but the proportion of aggregates which are self-supplied has remained high throughout the period for all of the Majors' integrated RMX and asphalt businesses.
- 10.3 In this section, we set out our assessment of whether vertical integration in aggregates, cement and RMX may give rise to one or more AECs through exclusionary behaviour towards rivals (see paragraphs 4.30 to 4.32).² We also present evidence on the possible efficiencies which may be associated with vertical integration.³
- 10.4 We first review evidence on the rationales for vertical integration and the possible efficiencies associated with it. We then present our assessment of whether vertical integration may give rise to one or more AECs through exclusionary behaviour.

Rationales for and efficiencies from vertical integration

- 10.5 The Majors told us that vertical integration enabled them to:
- (a) exploit efficiencies in their supply chains;
 - (b) remove double marginalization;⁴
 - (c) more efficiently forecast demand for aggregates and cement;
 - (d) obtain access to RMX end-customers allowing a better understanding of their needs and allowing integral solutions for complex and value-added projects; and
 - (e) ensure the supply and quality of inputs for their RMX businesses.
- 10.6 On the other hand, some parties have indicated that increased vertical integration could lead to some logistical difficulties and could make it more difficult to serve

¹ Source: BDS report 2011; combined share of Majors for sales of RMX in GB including volumetric trucks.

² We did not receive any submissions on whether vertical integration might soften competition in the RMX markets, and therefore do not consider this theory of harm in this section.

³ Our analysis of the way in which vertical integration may affect competition in the cement market through its impact on ability and incentives to coordinate is set out in Section 8 and Appendix 8.5.

⁴ The elimination of double marginalization appears unlikely to be a significant efficiency in this market. Indeed, double marginalization occurs if both the upstream and the downstream businesses hold market power. RMX appears to be generally competitive (see Section 9), which makes it doubtful that double marginalization would occur if companies were not vertically integrated.

some customers that might prefer a more 'local' approach. Appendix 10.1 provides supporting evidence on the possible efficiencies, advantages and disadvantages of vertical integration from parties' submissions and internal documents.

- 10.7 In general, many internal documents of the Majors (for example, strategy reports) view vertical integration as a strength (or the lack of sufficient vertical integration as a weakness), and having a balanced portfolio of aggregates, cement and RMX is seen as beneficial. The main advantages of vertical integration that come out of the internal strategy documents of the Majors appear to be the ability of the upstream businesses to sell internally (route to market) and of the downstream businesses to source internally (security of supply).
- 10.8 There are very few internal documents which refer to specific efficiencies linked to vertical integration over and above the two advantages in paragraph 10.7. Further, no vertically-integrated company was able to quantify the total value of these benefits. Lafarge told us that its ability to produce value-added products (adding £[~~8~~] million in profits) relied on its vertical structure. Hanson stated that vertical integration was not essential to compete in the industry or to provide an independent customer base. However, Hanson told us that vertical integration was key to its business, in allowing Hanson the efficiencies and independence of self-supply. We also reviewed evidence from smaller aggregates and RMX producers and from customers (see Appendix 10.1). Evidence from mid-tier independents highlights the importance of having a balanced portfolio. Breedon Aggregates, for example, explained how it usually tried to expand its aggregates business into markets where it already produced concrete or similarly increased its RMX presence in areas where it could supply aggregates. Brett Group told us that vertical integration gave cement producers the ability to balance their position.
- 10.9 Customers maintained some of the advantages of dealing with vertically-integrated suppliers in certain instances, although vertical integration did not seem to be always the primary or sole factor affecting their choice of supplier. Balfour Beatty explained that there might be advantages in dealing with vertically-integrated companies when there was a major project and it required large volumes. BAM Nuttall said that security of supply was an advantage of vertically-integrated companies and could be part of its decision-making process.
- 10.10 In summary, although the evidence from internal documents we reviewed suggested that the Majors perceived vertical integration to be a strength, we did not find evidence that there were large efficiencies associated with vertical integration between cement, aggregates and RMX.

Vertical integration and exclusionary behaviour

- 10.11 Foreclosure describes a behaviour by a vertically-integrated company to restrict its rivals' access to customers or to an essential input. If the strategy is successful, rivals may be excluded from the market (total foreclosure) or be unable to compete effectively (partial foreclosure).
- 10.12 None of the parties alleged, and nor did we find any evidence, that vertically-integrated producers are bundling cement, aggregates and/or RMX in a way that may distort competition in any of the reference markets. However, some parties made allegations that the vertical integration of the Majors from cement into RMX resulted in partial foreclosure of independent RMX competitors, for instance through restricting supply of cement (including by charging high prices of cement) to independent RMX competitors and/or because of cross-subsidies from the GB producers' cement

businesses to their integrated RMX businesses, thereby creating a squeeze on the independent producers' margins.⁵

- 10.13 Most of the concerns of possible exclusionary behaviour related to the possibility of foreclosure with respect to the supply of cement, rather than the supply of aggregates. The high-level evidence on the supply of aggregates suggested that Majors may generally lack the ability to engage in such foreclosure because the five major vertically-integrated companies only account for around 30 per cent of aggregates used by independent RMX producers at a national level, suggesting that the majority of independents are able to source aggregates from companies other than the vertically-integrated companies. However, the Majors may account for a higher share of supply of aggregates in some local markets, which we have not investigated (see paragraph 6.127). We therefore do not consider foreclosure of downstream competitors through the supply of aggregates any further.

Overview of the conditions for foreclosure through the supply of cement: ability and incentives

- 10.14 As set out in the Guidelines, for vertical relationships to result in foreclosure of rivals, the firms involved must have significant market power in one or more markets along the supply chain. They will also need to have both the ability and an incentive to seek to foreclose rivals (this will not necessarily be the case, even if the firms enjoy significant market power).⁶

Ability to foreclose

- 10.15 Vertically integrated companies may have the ability to pursue a strategy to foreclose RMX rivals, either partially or fully, where the following conditions are satisfied:

- (a) the input supplied is important;
- (b) the vertically-integrated companies have a significant degree of market power in the supply of cement (either individually, or through the exercise of joint market power); and
- (c) RMX rivals do not have effective counter-strategies (such as switching to a different input).

- 10.16 We did not undertake a detailed analysis of the ability of vertical-integrated companies to foreclose rival RMX suppliers, for the reasons set out below in paragraph 10.33. However, we note that it is likely that vertically-integrated companies may have the ability, either unilaterally or in a coordinated manner, to foreclose independent RMX suppliers in certain local areas, for the following reasons:

- (a) Cement is a necessary input into the production of RMX. We estimate that cement and cementitious materials account for 39 to 45 per cent of variable costs of production of RMX (see Appendix 6.5, Table 6). A relatively small increase in the price of cement may therefore adversely affect the ability of independent RMX suppliers to compete.
- (b) As set out in Section 8, we think that three of the four GB cement producers are likely to be able to exercise a degree of joint market power.

⁵ See [summary of hearing with BAA](#).

⁶ The Guidelines, [paragraph 274](#).

(c) It does not appear likely that there are timely and effective counter-strategies that would allow independent RMX suppliers to avoid a price increase by switching from cement to a different input. Though some partial substitution to cementitious products (such as GGBS or PFA) may be possible, this will only be possible for RMX producers who have the facilities to store the additional inputs. In addition, GGBS and PFA cannot substitute fully for cement, and we found that Hanson has the ability to exercise significant market power in relation to the supply of GGBS in GB (see paragraph 8.480).

Incentives for foreclosure

10.17 Incentives to engage in foreclosure strategies will depend on whether such a strategy is likely to be profitable. Foreclosure of downstream rivals will almost necessarily entail some costs, and therefore the incentives for foreclosure will depend on whether the potential gains from foreclosure outweigh the costs of a foreclosure strategy. The potential gains from foreclosure, and costs of foreclosure, can be thought as:

(a) *Gains from foreclosure*: the proportion of RMX sales that switch from the foreclosed RMX producer(s) to the downstream RMX businesses of the vertically integrated producers, multiplied by the margin earned on those additional RMX sales.

(b) *Costs of foreclosure*: the proportion of RMX sales that do not switch to the vertically-integrated supplier multiplied by the cement margins earned on those lost cement sales.

10.18 There may also be further gains from foreclosure above the immediate impact on RMX margins: it may be a profitable long-term strategy, in some circumstances, for a vertically-integrated producer to seek to squeeze the margins of independent RMX producers in order to prevent the growth of independent RMX producers and limit the likelihood of their potential upstream entry in cement production or importation.

10.19 The higher the margin earned on RMX sales relative to the margin earned on cement sales, the more likely it will be profitable to foreclose downstream RMX rivals. If margins earned on RMX sales are low relative to cement margins, a strategy of foreclosure will be profitable only if the vertically-integrated producer is able to capture a relatively large proportion of the customers of the foreclosed independent RMX suppliers. This, in turn, is more likely to be the case if a Major is the closest competitor to the foreclosed independents.

10.20 Our estimates of margins on RMX and cement sales are presented in Appendix 6.5. We found that unit profit margins over variable costs were consistently higher for cement sales than they were for RMX sales: they ranged from [redacted] to [redacted] per cent for RMX and [redacted] to [redacted] per cent for cement for the period from 2007 to 2011. This was also consistent with submissions from various parties who told us that the RMX markets were generally competitive and did not generate high returns. The fact that RMX margins were generally low in comparison with cement margins suggested to us that a strategy of foreclosing independent RMX suppliers in order to capture a larger share of the RMX market (but with the cost of losing some cement sales) could only be profitable in local areas where a Major was the closest competitor to the foreclosed independent RMX suppliers.

Outcomes

- 10.21 If foreclosure had been or was occurring, we could expect one or more of the following outcomes:
- (a) reduction in the margin on RMX earned by independent RMX producers (due to input prices increasing relative to RMX prices—thereby creating a margin squeeze);
 - (b) exit by independent RMX producers; and
 - (c) increase in the share of supply of RMX held by the vertically-integrated producers.

Evidence of margin squeeze

- 10.22 We found that there was evidence that the price of cement to independents had increased more, on average, than the average downstream price of RMX, suggesting that the margin available to RMX producers over cement costs was likely to have reduced between 2007 and 2011. We found that the average price of RMX charged by the Majors increased by between [x] and [x] per cent between 2007 and 2011 depending on the Major,⁷ whereas the average price of cement charged by the GB cement producers to independents increased by between [x] and [x] per cent depending on the cement producer⁸ between 2007 and 2011. This suggests that, all other things being equal, the margin of independent RMX producers over cement costs has reduced on average between 2007 and 2011, which could be indicative of a margin squeeze (though we note that impact on overall variable RMX margins would also depend on how other variable costs had evolved between 2007 and 2011).⁹
- 10.23 The GB cement producers told us that the observed fall in RMX prices compared with cement prices was not a consequence of foreclosure, but due to market conditions, and in particular the intensity of competition as a result of significant excess capacity in the RMX sector due to the reduction in demand, as well as the emergence of new competitors in RMX (volumetric trucks).
- 10.24 We also noted that the Majors' internal pricing policies suggested, if anything, that their aim was to attempt to set high RMX prices rather than a policy of aggressive RMX pricing so as to attempt to squeeze independents margins. Indeed, to the extent that there was any cross-subsidization, the cross-subsidization occurred in the opposite direction:¹⁰ relatively high aggregates internal prices were charged to internal RMX businesses—which would have the effect of transferring profits upstream rather than downstream and would not have the effect of incentivizing downstream management to compete particularly aggressively downstream.¹¹ We also noted that our analysis of the prices which GB cement producers charged each other for cement suggested that, in many cases, GB cement producers tended to charge each other higher prices, on average, than they did to independent customers (see paragraph 7.203). This did not appear consistent with strategies to foreclosure inde-

⁷ Based on ex-works prices; calculated as gross revenue / cubic metre. See Appendix 6.5, Figure 31.

⁸ Based on average weighted prices of CEM I charged by GB producers to independent customers; see Appendix 7.12, Figure 1.

⁹ We also analysed variable profit margins of three mid-tier independent RMX suppliers in Appendix 6.6. However, there were no consistent results across the three producers.

¹⁰ See Appendix 6.5.

¹¹ Although we are looking at foreclosure in cement, it would not appear a consistent strategy for suppliers to both squeeze cement margins and try to inflate RMX prices through high aggregates prices.

pendent RMX producers. The internal pricing policies of the Majors and the evidence on pricing of cement cross-sales suggested that, rather than trying to foreclose independent RMX producers, the aim of the Majors was to soften competition in the downstream RMX markets.¹²

10.25 The internal documents we reviewed were generally not conclusive on the existence of foreclosure strategies (see Appendix 10.1). Although some Aggregate Industries documents alluded to low cement costs through vertical integration being a factor in driving down prices of RMX, other internal documents suggested that the reason for the reduction of RMX prices was increased competition as a result of the downturn and also due to increased presence of some independents.

10.26 There was an internal document which suggested that the vertically-integrated producers, rather than attempting to squeeze the margins of RMX competitors, were maintaining internal prices of aggregates artificially high in an attempt to dampen incentives on their downstream business to erode margins in RMX which would be inconsistent with foreclosure strategies. An example of this is an internal email from [REDACTED] to [REDACTED], dated 7 January 2008:

We must remember that Hanson [REDACTED] will follow their normal in-house policy of inflating their inter-company transfer prices and then letting their ready-mix concrete division find its own pricing level in the market- this is just what their main competitors [REDACTED] and [REDACTED] are currently doing!
[REDACTED]¹³

10.27 [REDACTED]

Evidence on exit by independent RMX producers

10.28 Estimates of the number of RMX sites that were opened and closed between 2007 and 2010 are presented in Section 9, Table 9.7. We note that, although there has been some exit by independent RMX producers in the period between 2007 and 2010, the estimates in Table 9.7 suggest that the Majors have closed many more sites than the independent RMX producers during the period, with the Majors accounting for 81 to 98 per cent of RMX sites closed between 2007 and 2010.

10.29 In addition, the estimates in Table 9.7 suggest that, while there has been net exit by the Majors between 2007 and 2010 (the number of sites closed by the Majors far exceeds the number of sites opened by the Majors), there has been a small net entry by independent RMX producers. These facts do not appear consistent with any widespread foreclosure of independent RMX producers by the Majors, who appear to have reduced capacity in RMX since 2007.

Evidence on RMX shares of supply

10.30 We set out in Table 10.1 below estimates of the GB shares of RMX sales for years 2005 to 2011. This table does not include sales of RMX by volumetric trucks because BDS started to report on sales of RMX by volumetric trucks in 2009, and for the purpose of this analysis data on a longer time period was necessary. Therefore, the shares reported here are not the shares of sales on the relevant product market as

¹² The potential for vertical integration to dampen competition is discussed in the Guidelines, [paragraph 271](#). Though we note that vertical integration could have the effect of dampening competition in RMX markets, we thought the main impact of vertical integration would be to dampen competition between cement suppliers through the role of vertical integration in coordination (see Section 8 and Appendix 8.5).

¹³ [REDACTED]

defined in Section 5 and as reported in Section 9. Table 10.1 suggests that the share of independent RMX producers has grown from 21 per cent in 2005 to 27 per cent in 2011.¹⁴ This appears inconsistent with any widespread foreclosure of independents by the Majors.

TABLE 10.1 GB shares of RMX sales over time, 2005 to 2011

	<i>per cent</i>						
	2005	2006	2007	2008	2009	2010	2011
Hanson	[18–20]	[18–20]	[18–20]	[18–20]	[16–18]	[16–18]	[18–20]
Cemex	[20–22]	[20–22]	[18–20]	[18–20]	[18–20]	[16–18]	[18–20]
Tarmac	[18–20]	[18–20]	[20–22]	[20–22]	[18–20]	[16–18]	[14–16]
Aggregate Industries	[8–10]	[8–10]	[10–12]	[10–12]	[10–12]	[10–12]	[10–12]
Lafarge	[8–10]	[8–10]	[8–10]	[8–10]	[8–10]	[8–10]	[8–10]
Total Majors	<u>79.2</u>	<u>78.0</u>	<u>78.6</u>	<u>78.1</u>	<u>73.5</u>	<u>72.8</u>	<u>73.1</u>
Independents	20.8	22.0	21.4	21.9	26.5	27.2	26.9

Source: BDS reports.

10.31 We obtained data on shares of RMX sales by the Majors in 2012 from BDS, though this data related to the market structure as of January 2013 and therefore cannot be directly compared with Table 10.1. The market shares for 2012 are shown in Table 10.2 below. We can see that the GB share of independent RMX operators has continued to grow in 2012 compared with 2011, from 26.9 per cent to 29.3 per cent. Part of this increase is likely to be due to the sale by Aggregate Industries of some of its RMX plants in Scotland to Breedon.

TABLE 10.2 GB shares of RMX sales in 2012 (not including volumetric trucks)

Hanson	[18–20]
Cemex	[16–18]
HCM	[12–14]
Lafarge Tarmac	[10–12]
Aggregate Industries	[10–12]
Total Majors	70.7
Independents	29.3

Source: BDS 2013 report.

Note: These estimates assign ownership of RMX plants at the time of writing the BDS report (September 2013) using data on plant-level sales from 2012. Lafarge Tarmac and HCM are therefore listed in this table, although both these entities only came into existence in January 2013. Similarly, the Breedon assets recently acquired from Aggregate Industries in Scotland are assumed to be under Breedon ownership in these estimates.

10.32 Brett Group told¹⁵ us that high-level statistics on shares might be misleading and skewed by growth of independent RMX activity in and around the London region (and limited to lower-specification RMX products).

Conclusions

10.33 The high-level evidence on shares, entry and exit, and pricing behaviour of the Majors did not point in the direction of any widespread foreclosure. On this basis and given the constraints on the time and resources available for our investigation overall,

¹⁴ If volumetric trucks had been included, the increase in the share of independent RMX sector is likely to be larger. However, we do not have data on sales by volumetric trucks prior to 2009.

¹⁵ Brett Group hearing.

we did not have reason to prioritize further work to establish whether any foreclosure may have occurred in particular local markets for RMX, and did not do so.¹⁶

¹⁶ This approach is supported by [paragraph 36](#) of the Guidelines—see paragraph 4.5.

11. Competitive effects of policy and regulation

Introduction

11.1 In this section we consider whether certain aspects of regulation that cover the aggregates and cement markets in GB could affect the way competition works in those markets. We have focused on the areas of regulation and policy that were highlighted in the submissions we received from main and third parties. These are:

- (a) the planning regime for land-won primary aggregates, marine aggregates and secondary and recycled aggregates;
- (b) the aggregates levy;
- (c) the EU ETS; and
- (d) the CRC, CCAg and the CCL.

11.2 These areas of policy and regulation are described in Section 2 and Appendices 2.1 and 2.2.

The planning regime

Land-won primary aggregates

11.3 We first consider whether aspects of the planning regime could affect competition. In particular, we discuss (a) whether the planning system creates barriers to entry, (b) issues relating to landbanks and (c) whether the role of AWP's increases market transparency in such a way that it could facilitate coordination between producers.

Obtaining planning permission

11.4 We found in paragraph 6.56 that expanding an existing aggregates site, either by increasing its output or by extending the site, is likely to be easier, faster and cheaper than developing a new site, because the planning process is likely to be simpler and much of the required equipment will already be in place. We found that this implies that existing producers have an incumbency advantage over new entrants by favouring extensions of existing quarries over developing new sites.¹ This applies to companies—regardless of size—with existing operational sites.

11.5 This is confirmed by planning permission approvals, which indicate that considerably more permissions are granted for extensions than for new developments. The Aggregates Minerals 2009 Survey showed that between 2006 and 2009, for sand and gravel, 126 permissions were granted for extensions as opposed to 36 permissions that were granted for new quarries. Similarly for crushed rock, for the same period, 49 permissions were granted for extensions of existing quarries and ten permissions were granted for new quarries.²

¹ The MPA noted that local authorities might favour extensions to new sites in order, for example, to minimize the number of sites operating in a given area to minimize amenity and traffic impacts. Two of the Majors told us that LMPAs may have a preference for granting extensions to existing sites rather than for greenfield quarries, because they were not popular with local communities and for environmental reasons, although they said that local authorities would have to grant permissions for new developments in order to ensure sufficient supply to meet local demand (see Appendix 11.1, paragraphs 3 & 4).

² Collation of the results of the 2009 aggregates minerals survey for England and Wales.

Landbanks

- 11.6 One of the key characteristics of the planning system for land-won primary aggregates is the use of landbanks.³ This is described in Appendix 2.1. We considered possible ways in which planning policy regarding landbanks could have adverse implications for competition:
- (a) The MPA identified concerns that some LMPAs had interpreted the landbank recommendations (ie seven years' landbank for sand and gravel, and ten years' landbank for crushed rock) too rigidly with the effect that planning applications for aggregates sites might be refused if the landbank in an area extended beyond the periods set out in the planning guidance—this might make it more difficult for a new entrant to undertake aggregates extraction in competition with the incumbents in areas where the landbank targets were exceeded.
 - (b) Aggregates producers might have an incentive to obtain and hold sites with permitted reserves (either without developing them further, or by mothballing previously operational sites) so that the landbank in an area remains above the minimum target period and new entrants would find it difficult to obtain planning permission for new sites.

Length of landbanks and ownership of permitted reserves

- 11.7 The competition concerns expressed in the previous paragraphs are interrelated, in that overly-stringent interpretation of the landbank rules by LMPAs might reduce the competitive constraints on incumbent suppliers from new entrants, and incumbent suppliers might take steps (by holding sites with permitted reserves) to exacerbate the impact on competition of any such LMPA policy. In order to assess whether there might be geographic areas where there might be cause for concern, our approach has been to identify areas:
- (a) in which the landbank of sand and gravel or crushed rock met or exceeded the relevant minimum period (on the basis that in those areas, the relevant LMPA might be less willing to grant planning permission for new aggregates sites); and
 - (b) of the areas in (a), in which one or more of the Majors had a significant share of the permitted reserves.⁴
- 11.8 Our analysis is set out in Appendix 11.2. We found that there were a minority of counties in England, and regions in Scotland and Wales, where landbanks exceeded seven years and one Major had over 50 per cent of permitted reserves in that area, or two Majors collectively held over 75 per cent of permitted reserves.
- 11.9 We then compared the overall share of permitted reserves owned by each of the Majors in GB at the end of 2010 with their share of the production of primary aggregates in 2011 (see Appendix 11.2, Table 3). We found the shares of permitted reserves and production to be similar. We also analysed the correlation between each Major's share of reserves and its share of production on a county-by-county basis and found that for sand and gravel, the correlation coefficients were over 0.75

³ A landbank is defined as a stock of planning permissions (measured in years) for permitted reserves. It is calculated by dividing the volume of existing permitted reserves by the average annual provision in the area.

⁴ Information on permitted reserves and landbanks was taken from AWP reports for 2009; market shares based on BDS data for 2010.

for all the Majors and for crushed rock the correlation coefficients were over 0.6 for all the Majors.

- 11.10 Taken together, these factors indicated to us that the Majors were not holding significant inactive sites of permitted reserves in the landbanks to prevent entry, since the size of each Major's local stock of permitted reserves appeared to be positively correlated to its local share of production. If permitted reserves were being 'warehoused', we might expect to see that the size of a Major's local stock of permitted reserves exceeded its local share of production.
- 11.11 Notwithstanding the concerns set out in paragraph 11.6(a), the MPA reported that the annual surveys of its members between 2000 and 2008 found that most planning applications for new primary aggregates sites were successful. We also noted that other research indicated that industry participants generally felt that the planning system worked well and that environmental factors were more common reasons for refusing planning permission than the length of the existing landbank.⁵ Furthermore, our analysis suggested that in most areas where aggregates were extracted, the landbank recommendations were met, as shown in Appendix 11.2, Annex 1.

Incentives to produce aggregates at sites where planning permission has been granted

- 11.12 We considered whether aggregate producers had an incentive to hold sites with permitted reserves without developing them (or to mothball previously operational sites) in order to maintain the length of the landbank in an area and prevent a new entrant from gaining planning permission for another site in the same area (see also Appendix 2.1).
- 11.13 The regulatory framework provides against holding sites with permitted reserves without utilizing them in that LMPAs can make orders prohibiting the resumption of minerals development on land where no such development has been carried out to any substantial extent for a period of at least two years and where, on the evidence available to the LMPA at the time when it makes the order, it appears that development is unlikely to resume to any substantial extent.⁶ Sites subject to such prohibition orders are not included in permitted reserves.
- 11.14 The Majors told us that holding undeveloped sites in a landbank and/or mothballing previously active sites did not make commercial sense for the following reasons:
- (a) Once permission had been granted to operate a quarry, there was in most cases a strong incentive to produce aggregates from the site because often the leasehold arrangements granting permission to quarry materials imposed minimum rents per year regardless of whether aggregates were quarried.
 - (b) Given the lengthy and costly process of obtaining planning permission, there was a clear commercial imperative for implementing it as soon as possible to recoup the costs of obtaining it.
 - (c) The costs of mothballing a site could be significant, including the cost of making the workforce redundant, rent, security, maintenance and other costs.

⁵ www.british-aggregates.co.uk/documentation/doc88.pdf.

⁶ Minerals Planning Guidance 4. We noted that the use of these powers will generally involve the payment of compensation to the affected aggregates producer, for 'loss of value', unless these powers are used in agreement with the producer. This suggested to us that these powers are rarely used.

- (d) The local geographic scope of aggregates markets made it inefficient to mothball sites and withdraw from local areas.

The role of aggregates working parties

- 11.15 We considered whether AWP provided a mechanism for the exchange of commercial information between their members which might facilitate coordination. The role of AWP is set out in paragraph 2.27 and Appendix 2.1. We were told that AWP drew members from the LMPAs in its region, the aggregates industry (by representation from the MPA, the BAA and the National Federation of Demolition Contractors) and government bodies. The MPA is represented on the AWP by its own officials and by employees of the Majors and small and medium-sized enterprises.
- 11.16 The Majors told us that the procedures and controls maintained by the AWP prevented the AWP being used as a forum for disclosure or exchange of information between aggregates producers. They said that meetings of the AWP were technical in nature and that commercially sensitive information was not disclosed (data was collated so that information on sales and reserves of any individual operator or for any individual quarry could not be ascertained). Hanson said that the Secretary and Chairman⁷ of each AWP set the agenda for each meeting, and these individuals were invariably from LMPAs. Hanson also noted that industry personnel represented a relatively small proportion of those involved in AWP and that members were drawn from smaller producers as well as the Majors. Aggregate Industries said that minutes of the meetings were published on the DCLG website, which was difficult to reconcile with an inappropriate information exchange.⁸

Conclusions on the planning regime for land-won aggregates

- 11.17 We have already concluded that the length of the planning process limits the competition faced over the medium term by existing aggregates producers from entry by operators developing new sites (see paragraph 6.47). The planning regime also creates incumbency advantages for existing aggregates producers as site extensions are likely to be preferred to new site developments by LMPAs and the planning process for site extensions is generally much shorter and simpler than for new sites (see paragraphs 6.56 and 11.4).
- 11.18 Our analysis of aggregates landbank data indicates that aggregates producers' shares of permitted reserves in landbanks are in most cases in proportion to their share of supply of aggregates. Further we saw from BAA evidence that the planning system was felt to work well and applications for new primary aggregates sites did not tend to be constrained by landbank considerations (see paragraph 11.11). We note the arguments that holding sites with permitted reserves without developing them (or mothballing previously operational sites) in order to preserve landbanks and prevent competitors obtaining planning permission would not be commercially viable, and the possibility that LMPAs could issue prohibition orders on such sites which would prevent the extraction of aggregates in the future. We also note the new NPPF and planning guidance issued by DCLG helps address these concerns (see Appendix 2.1). Taken together, these factors suggest that planning policy concerning aggregates landbanks is unlikely to be distorting competition in local aggregates markets.

⁷ Each AWP is chaired by a County Planning Officer or the equivalent, or other independent member.

⁸ [Aggregate Industries response to the issues statement](#).

11.19 While some of the detailed ways in which the aggregates planning system functions have the potential to increase market transparency between suppliers, we consider that the procedures adopted by AWP, together with the number of parties and public bodies represented on the AWP, make it unlikely that commercially sensitive information would be exchanged during AWP meetings.

Marine, secondary and recycled aggregates

11.20 Marine, secondary and recycled aggregates are subject to different planning regimes —see paragraphs 2.31 to 2.37 and Appendix 2.1. We noted in paragraph 6.71 that the length of time required to obtain a production agreement for marine dredging creates a barrier to entry in the medium term in a similar way to the extraction of land-won aggregates. We also found that the planning regime was considerably less of a barrier to entry into the production of secondary and recycled aggregates than for primary aggregates as the planning process was typically considerably shorter (see Appendix 6.2).

The aggregates levy

- 11.21 Details of the aggregates levy are set out in paragraphs 2.38 to 2.40 and Appendix 2.1. The aggregates levy was introduced in 2002 with the aims of internalizing some of the externalities from quarrying, such as dust, noise, visual intrusion and biodiversity loss and introducing a price incentive to encourage the use of waste, spoil and recycled aggregates.
- 11.22 The Majors told us that the fact that secondary and recycled aggregates were exempt from the aggregates levy was one of the reasons why these were cheaper to produce than primary aggregates, and so why their share in the overall aggregates market had grown in recent years. They said that recycled and secondary aggregates directly constrained the pricing of primary aggregates.
- 11.23 Aggregate Industries told us that it was strongly of the view that aggregates taxes and credits distorted efficient production. It said that the aggregates levy had been a barrier to the expansion of primary aggregates and resulted in the favouring of secondary and recycled aggregates over primary aggregates. The BAA made similar points and said that the levy meant it was cost-effective to transport secondary aggregates further. According to Aggregate Industries, the levy constituted approximately 20 to 25 per cent of the average sales price of aggregates.⁹ Wardell Armstrong (an independent mining, minerals and engineering consultancy) estimated that the levy comprised approximately 15 to 20 per cent of the average sale price of aggregates to consumers (net of VAT), with the percentage varying across a range of aggregates products and regions as the levy was applied as a flat rate irrespective of value (see Appendix 11.1, paragraph 26).
- 11.24 The BAA told us that the Majors were able to cover the cost of the levy with revenue from other areas of their business while the independents could not, and therefore the impact of the levy fell disproportionately on the independents. It also told us that china clay, slate aggregates and shale were classified as secondary aggregates. According to the BAA, these aggregates are known as secondary aggregates because they are supposed to be by-products of another process and are not therefore subject to the levy. However, the BAA noted that the by-products of primary aggregate production, such as crushed fines and scalplings, were subject to the levy. The BAA

⁹ See also Appendix 11.1, paragraph 22.

therefore considered that the levy distorted the market. In our view, the levy is designed to distinguish between primary and secondary aggregates, effectively to encourage the use of aggregate materials that would be produced in any event as by-products of other activities rather than the production of primary aggregates. We consider that it is a matter for HMT and DCLG to ensure that the rules on the application of the Aggregates Levy accurately reflect the intended public policy outcome.

- 11.25 However, Hanson commented that the exemption of recycled and secondary aggregates from the aggregates levy, together with support for the greater use and production of secondary and recycled aggregates (through the NPPF and other public and regulatory initiatives), was an example of the policy and regulations in place enhancing and directly subsidizing competition, since these materials could be substituted in full for all primary low-grade aggregates.¹⁰

Conclusions on the aggregates levy

- 11.26 We recognize that the introduction of the aggregates levy has placed an additional cost on primary aggregates production resulting in an increase in the price of primary aggregates. We also recognize that the effectiveness of the levy in incentivizing the use of secondary and recycled aggregates (which is the primary aim of the levy) might be limited by the extent of substitutability between primary aggregates and secondary and recycled aggregates. However, we conclude that the aggregates levy does not give rise to specific concerns relating to competition, as the effects of the levy on patterns of aggregate use are consistent with—and do not extend beyond—the intended policy aims. While it may be possible that the Majors can cover the cost of the levy from other areas of their business more easily than smaller producers, any potential distortion arising from the different scale and diversity of activities of producers is not a direct consequence of the aggregates levy.¹¹ The fact that the levy applies in the same way to all primary aggregates producers means that there is no distortion between competitors introduced as a result of the levy.

The EU Emissions Trading Scheme

- 11.27 The EU ETS is described in paragraphs 2.54 to 2.60 and Appendix 2.2.
- 11.28 The EU ETS as a whole, including the changes introduced in Phase III, has implications for companies' costs and production decisions. Several concerns were raised about the potential effects on competition in the GB cement market, as set out in Appendix 2.2 and Appendix 11.1.
- 11.29 It was put to us that because allocations of free carbon allowances under the EU ETS were unlikely to be sufficient to cover all emissions, cement manufacturers would need to buy additional allowances. Therefore, producers outside the EU would have a significant competitive advantage relative to EU producers because they did not incur this cost. We were told that as well as the direct cost in purchasing allowances, the use of allowances implied an opportunity cost in cement production. Hanson noted that this cost was volatile and would be driven by exogenous factors (for example, the severity of the winter). It said that the ability to pass this input cost

¹⁰ [Hanson's response to the updated issues statement](#), paragraph 18.8.

¹¹ As with other aspects of policy (eg the planning system), the differential impact of the costs of policy and regulation on small and large producers as alleged by BAA (see Appendix 11.1) is not unique to the aggregates sector. Larger companies have deeper pockets and there is a distribution of different-sized companies in these markets. Even where a large company can more readily fund costs imposed by regulation, its incentives and actions are also affected by those policies. Vertically-integrated companies may have an ability and incentive to cross-subsidize particular stages of production for strategic reasons—we assess the scope for vertical effects in these markets in Section 10.

increase through to price depended on the symmetry of market participants. We were told that the policy had encouraged the closure of less carbon-efficient cement plants but could discourage new investment in greenfield plants because of the cost of allowances.

- 11.30 One of the key aspects of Phase III of the EU ETS is the introduction of the partial cessation rule. The Majors told us that this was a change that had important effects regarding imports from outside GB. They told us that the 50 per cent (and 25 and 10 per cent) production thresholds (see Appendix 2.2) provided strong incentives for cement producers in countries where domestic demand was extremely low relative to recent production levels (eg Spain, Greece and the Republic of Ireland—countries that already exported to GB) to export. This was because those cement manufacturers that were not producing at least 50 per cent of their historical clinker production (with thresholds also at 25 and 10 per cent) would have their carbon allowances under the ETS dramatically reduced (and since the allowances were tradable, their loss would represent a significant loss of revenue).
- 11.31 We were also told that the partial cessation rule could have an effect on production efficiencies, as there was an incentive to keep all plants open, albeit at a reduced rate of capacity utilization, so as to obtain a full entitlement of carbon allowances.

Conclusions on the EU Emissions Trading Scheme

- 11.32 We note that the EU ETS is intended to help promote reductions in carbon emissions and so is designed to provide financial incentives to seek efficient production. Therefore it is consistent with the policy intentions to increase marginal production costs for inefficient plants. In relation to the argument that the ETS creates a distortion in the relative costs of producing cement inside and outside the EU, this could in principle be the case. However, because none of the cement supplied in GB is currently imported into GB from outside the EU, we do not believe that the existence of the ETS is distorting competition in the GB cement market in favour of non-EU producers to a material extent. We consider the impact of the ETS on the incentives to import cement into GB from other EU countries in Section 7.
- 11.33 We have seen evidence that the way carbon allowances are allocated to cement producers under the ETS, together with the partial cessation rule, create incentives for GB producers to allocate production between their plants in a less efficient way than would otherwise be the case, in order to retain in full their free allocations of carbon allowances. This is because, in a period of under-utilization of capacity, the ETS system may provide incentives to maintain at least 50 per cent (or 25 or 10 per cent) utilization of all plants, rather than (say) mothballing one plant and using another at full capacity. This means that some less efficient plants may continue to operate and that economies of scale from concentrating production at fewer plants are not being realized. These inefficiencies could have the effect of increasing the cost of cement production and ultimately increasing the price consumers pay for cement. As set out in Appendix 11.1, there is some evidence that producers actively take into account the impact on their carbon allowances in making production decisions. However, we do not have evidence that, even if marginal costs are increased for some producers as a result of these production decisions, this has had a material effect on cement prices. Therefore we reach no decision on whether the incentives for inefficient production created by the ETS partial cessation rules represent a distortion of competition. We are, however, concerned to note that we observe incentives for inefficient production (ultimately resulting in higher carbon emissions than might otherwise be the case), which are generated by the way in which carbon allowances are allocated to cement producers under the ETS and the partial cessation rules.

Carbon Reduction Commitment, Climate Change Agreements and the Climate Change Levy

- 11.34 The CRC, CCAg and CCL are described in paragraphs 2.62 to 2.72.
- 11.35 The CRC does not apply to those carbon emissions already covered by the ETS (eg cement) but covers large aggregate sites. If over 25 per cent of an organization's emissions are covered by a CCAg, it will be exempt from certain aspects of the CRC (cement, ground granulated blast furnace slag and lime producers—among others—are covered by CCAgs but not aggregates producers). DECC told us that this could result in 'differential impacts' within the regulated sector, where an integrated aggregates and cement producer which had a CCAg would be exempt from the CRC, but a stand-alone aggregates company would have to comply with the CRC in full. As mentioned in paragraph 2.65, the CRC Energy Efficiency Scheme Order 2013 came into force on 20 May 2013, which would see the simplification of the CRC.
- 11.36 Cemex told us that, with regard to aggregates, the CRC was an example of environmental legislation that had a greater impact on larger operators and created a greater barrier to large operators looking to expand than new entrants. It said that the scheme covered organizations whose electricity consumption exceeded 6,000 MWh in the relevant qualification period—which Cemex estimated would apply only to aggregates producers extracting more than 1 million tonnes annually. Cemex's view was that the CRC was unlikely to apply to smaller operators (see Appendix 11.1).
- 11.37 Aggregate Industries told us that the CRC distorted competition. It noted that large cement producers were exempted from the CRC and small aggregates producers fell below the electricity consumption threshold at which the CRC took effect. Aggregate Industries submitted that this effect would be exacerbated by the new government plan to disapply the CRC rules on the supply of energy to facilities covered by the EU ETS (such as cement plants).

Conclusions on the CRC

- 11.38 We conclude that these policies and their interaction distort competition in that they have different impacts on different types of producers of the reference products in a manner that is unrelated to the carbon footprint of their operations (ie the intended policy outcome of these regulations). For example, an integrated aggregates and cement producer which had a CCAg would be exempt from the CRC but a stand-alone large aggregates company would have to comply with the CRC in full. This arises because:
- the CRC does not apply to those carbon emissions already covered by the ETS (eg cement operations) but covers large aggregates sites;
 - smaller aggregates producers would be exempt; and
 - if over 25 per cent of an organization's emissions are covered by a CCAg (which cover, among others, producers of cement but not producers of aggregates), it will be exempt from certain aspects of the CRC.¹²

¹² The MPA noted that most integrated aggregates and cement companies with cement CCAgs were still involved in the CRC because the potential 'one organization' exemption is difficult to apply to larger businesses which typically have more complex organizational structures. The MPA also noted that the rules of CRC would change on 1 April 2014 with the effect that all energy consumption covered by EU ETS and CCAgs would be completely excluded from CRC, but if the remaining energy consumption of a company/organization met the qualification thresholds for CRC then it would become a full participant. This

11.39 The interaction between CCAgs and the CRC appears to increase the costs of some aggregates producers more than others, regardless of the relative efficiencies of producers in terms of carbon emissions per tonne of aggregates produced. This would have led us to find an AEC and to consider whether a remedy was necessary. A remedy would most likely have been a recommendation to DECC that the CCAg exemption be reformed or abolished. However, DECC already proposes to abolish the CCAg exemption from 1 April 2014 as set out in the Government's response to its consultation on simplifying the CRC (see paragraph 2.71). In the circumstances it is unnecessary for us to find an AEC or to consider a remedy. We support DECC's proposal for reform.

would be the case even if the emissions from this remaining energy were less than 25 per cent of the total of the company's emissions (the exemption rules were being removed from the scheme). The result of these changes was that the same operations would be covered by the same regulations so there would be a level playing field for companies within the scope of the CRC.

12. Findings

- 12.1 As described in paragraph 1.1, on 18 January 2012, the OFT referred the supply or acquisition of aggregates, cement and RMX to the CC for investigation, under sections 131 and 133 of the Act. Section 134(1) of the Act requires us to decide whether 'any feature, or combination of features, of each relevant market prevents, restricts or distorts competition in connection with the supply or acquisition of any goods or services in the United Kingdom or a part of the United Kingdom'. If the CC decides that there is such a feature or combination of features, then there is an AEC.¹
- 12.2 For the reasons given in Sections 6, 9, 10 and 11, we did not identify any features giving rise to an AEC in any market in GB for the supply of aggregates or RMX.
- 12.3 For the reasons given in Sections 7 and 8, we concluded that there was a combination of structural and conduct features that gave rise to an AEC in the GB bulk and bagged cement markets.
- 12.4 The structural features are:
- (a) high market concentration;
 - (b) transparency of sales and production shares, wins and losses and customer–supplier relationships;
 - (c) high barriers to entry (including limits to the constraint imposed by imported cement);
 - (d) homogeneity of product;
 - (e) customer characteristics and behaviour (in particular, regularity of purchases, purchases at fixed locations, concentration of customer base and single sourcing for a particular job site); and
 - (f) vertical integration from cement into downstream operations.
- 12.5 The conduct features, the individual significance of which varies over time, are:
- (a) a strategic focus on maintaining market stability between the members of the coordinating group, frequently manifested in a focus on maintaining existing (or returning to pre-existing) relative shares of sales;
 - (b) tit-for-tat behaviour used to balance shares;
 - (c) price announcement behaviour (which facilitates price parallelism, and softens customer resistance to price increases);
 - (d) use of cross-sales as a mechanism for transparency, signalling and, on occasion, share balancing; and
 - (e) targeting of importers beyond normal competition on price and service.
- 12.6 These structural and conduct features combine together to give rise to an overarching feature in the GB cement markets, namely coordination among Cemex, Hanson and Lafarge.

¹ Section 134(2) of the Act.

- 12.7 The likely effect of these features is higher prices of cement in GB than would otherwise be the case for all GB cement users, whether this cement is ultimately sold through independent RMX and concrete producers, independent merchants or through the downstream businesses of the Majors.
- 12.8 For the reasons given in Sections 7 and 8, we also concluded that the following features of the GB cement markets combine to give rise to an AEC in the market for the supply of GGBS in GB as well as an additional AEC (over and above the AEC described in paragraph 12.3) in the markets for the supply of cement in GB, resulting in higher prices for GGBS and for cement than might otherwise be the case:
- (a) the extensive participation of Lafarge Tarmac and Hanson in both the GGBS supply chain on the one hand, and the GB cement markets on the other, whereby Lafarge Tarmac and Hanson are two of the top three GB cement producers and between them own all of the GBS and GGBS plants in GB;
 - (b) Lafarge Tarmac's entering into and maintaining a series of exclusive long-term agreements with GB steel producers for the supply by the GB steel producers of all of their BFS, from which, when water-cooled, Lafarge Tarmac produces GBS; and
 - (c) Lafarge Tarmac's and Hanson's entering into and maintaining a series of exclusive long-term agreements with each other for the supply by Lafarge Tarmac to Hanson of all of the GBS produced in GB intended for cementitious use in GB, as a consequence of which Hanson is responsible for all GGBS production in GB.
- 12.9 We considered there to be material customer detriments arising from higher prices for cement and GGBS than might otherwise be the case as a result of the AECs we identified:
- (a) We estimated that the customer detriment associated with high cement prices was about £30 million a year, but we consider that this is likely to be an underestimate of the average annual detriment over a full business cycle.
 - (b) We estimated that the customer detriment associated with high GGBS prices was of the order of £15–£20 million a year on average for the period 2007 to 2012, and we considered that this estimate was a reasonable approximation of the average annual detriment associated with high GGBS prices over a full business cycle.

13. Remedies

Introduction

13.1 In this section, we set out our assessment and consideration of the measures needed to remedy, mitigate or prevent the AECs and/or their resulting customer detriment that we have found. This section follows our consultation on our proposed package of remedies which we had set out in detail in our provisional decision on remedies, a summary of which was published on 8 October 2013, and published in full on 13 October 2013. In reaching our final decision on the appropriate package of remedies, which is set out in this section, we have taken into consideration the views and further evidence we have received from the relevant parties in their responses to the provisional decision on remedies, our provisional findings and the Addendum to provisional findings.

13.2 This section is structured as follows:

- (a) *Framework for consideration of remedies*: where we summarize the framework within which we consider remedies (paragraphs 13.3 and 13.4).
- (b) *Remedy measures included in our package of remedies*: where we discuss the measures that we have decided should form part of our package of remedies (paragraphs 13.5 to 13.352).
- (c) *Remedy options not being taken forward*: where we discuss the other remedy options that we have considered but have decided not to take forward (paragraphs 13.353 and 13.354).
- (d) *Assessment of relevant customer benefits*: where we consider whether there are any relevant customer benefits (RCBs) as defined under the Act arising from the features giving rise to the AECs which would be lost by introducing our package of remedies and if so whether we should seek to ensure that we retain any such benefits by modifying our package of remedies (paragraphs 13.355 to 13.361).
- (e) *Effectiveness and proportionality of our package of remedies*: where we assess the effectiveness and proportionality of our package of remedies (paragraphs 13.362 to 13.495).
- (f) *Decision on remedies*: where we set out our final decision on the package of remedies (paragraphs 13.496 and 13.497).

Framework for consideration of remedies

13.3 If the CC finds that there is an AEC, it is required under the Act¹ to decide whether action should be taken by it, or whether it should recommend the taking of action by others, for the purpose of remedying, mitigating or preventing the AEC and/or resulting customer detriment.²

13.4 If the CC decides action should be taken, it must then decide what action should be taken and what is to be remedied, mitigated or prevented. In deciding these ques-

¹ Section 134(4) of the Act.

² Sections 138(2) and 134(5) of the Act define customer detriment as one that results, or may be expected to result, from any AECs that have been found, and takes the form of either (a) higher prices, lower quality or less choice of goods or services in any market in the UK (whether or not the market to which the feature or features concerned relate); or (b) less innovation in relation to such goods or services.

tions, the Act requires the CC to ‘in particular, have regard to the need to achieve as comprehensive a solution as is reasonable and practicable to the adverse effect on competition and any detrimental effects on customers so far as resulting from the adverse effect on competition’.³ To satisfy this requirement, the CC considers how comprehensively potential remedies (or a package of remedies) address the AECs and resulting customer detriment, and whether they are effective and proportionate.⁴

Remedy measures included in our package of remedies

13.5 Based on our assessment and consideration of various possible remedy options to address the AECs and resulting customer detriment we have found, we have decided on a package of remedies that comprises the following three main elements:

- (a) *Cement plant divestiture remedy*: involving the divestiture of a cement plant by a Top 3 cement producer⁵ (see Figure 13.1 and paragraphs 13.7 to 13.138 below).
- (b) *Transparency-reduction measures*: two remedy measures aimed at reducing transparency in the GB cement markets, comprising:
 - (i) *Cement market data remedy*: restrictions on the disclosure and publication of GB cement market data (see Figure 13.2 and paragraphs 13.139 to 13.175 below); and
 - (ii) *Price announcement remedy*: a prohibition on generic cement price announcements (see Figure 13.3 and paragraphs 13.176 to 13.209 below).
- (c) *GGBS remedies*: measures to promote competition in the GGBS supply chain (see Figure 13.4 and paragraphs 13.210 to 13.352 below).

13.6 For each of these remedy measures we discuss the aims of the remedy; how the remedy effectively achieves its aims; and what is required to give effect to that remedy. Our discussion for each remedy measure is therefore set out under the following headings:

- a summary of our decisions in relation to the remedy;
- how the remedy addresses the AEC and/or resulting customer detriment;
- the key considerations relating to the design of the remedy; and
- how the remedy should be implemented.

Cement plant divestiture remedy

Summary of remedy

13.7 Figure 13.1 summarizes our cement plant divestiture remedy that would create a new entrant in the GB cement markets.

³ Section 134(6) of the Act.

⁴ The Guidelines, Part 4.

⁵ For the purposes of our consideration of remedies in this section, we define the Top 3 cement producers as Lafarge Tarmac, Hanson and Cemex.

FIGURE 13.1

Summary of remedy measure: cement plant divestiture remedy

We have decided that:

- Lafarge Tarmac should divest either the Cauldon plant or the Tunstead plant, and notify the CC, as soon as is reasonably practicable following the publication of this report, which cement plant it has selected for divestiture.
- In relation to the supply of limestone, a key raw material in the production of cement:
 - (a) Should the Cauldon plant be divested, Lafarge Tarmac's limestone quarry (Cauldon Quarry) that currently supplies it with raw materials should be included in the divestiture package.
 - (b) Should the Tunstead plant be divested, there are two possible options which Lafarge Tarmac should explore given that the limestone quarry which supplies the Tunstead plant also supplies Lafarge Tarmac's lime operations: (i) Lafarge Tarmac could sell all, or part, of its limestone quarry to the buyer of the Tunstead plant; or (ii) Lafarge Tarmac could enter into a long-term supply agreement with the buyer of the Tunstead plant to guarantee its supply of limestone on arm's length terms.
- The divestiture package should also include a network of depots such that the configuration of the depot network provides the divested cement plant with distribution capabilities that are sufficient for a stand-alone cement plant in terms of both geographic and customer reach.
- A buyer of either the Cauldon or Tunstead plant should have the option to acquire a limited number of fixed RMX plants from Lafarge Tarmac, subject to an upper limit based on a buyer's total annual cementitious requirement (including both the requirements of any RMX plants acquired from Lafarge Tarmac and any pre-existing downstream operations) not accounting for more than 15 per cent of the divested cement plant's annual cement production capacity. Should a buyer without any pre-existing downstream operations wish to acquire RMX plants up to this limit, we estimate that a divestiture package might include around seven 'large-scale' or 20 'small-scale' RMX plants, equivalent to around 0.5 million cubic metres of annual RMX production capacity. As part of the implementation of this option, the following terms shall also apply:
 - (a) A buyer would be permitted to opt out of acquiring any RMX plants and acquire the divested cement plant on a stand-alone basis. We would not require Lafarge Tarmac to sell any RMX plants to a buyer who did not wish to purchase any RMX plants or whose pre-existing downstream operations alone would exceed our stated upper limit.
 - (b) When identifying RMX plants to be included in any divestiture package, the CC will ensure that any RMX plants divested contribute towards a coherent geographic network for the purchaser taking into account the catchment areas around the divested cement plant and its distribution network, as well as the purchaser's existing operations.
- A divestiture of a cement plant should be made to a buyer who satisfies the CC's suitable purchaser criteria and should not be made to another GB cement producer.
- A monitoring trustee should be appointed as soon as is reasonably practicable following the publication of this report to ensure the protection of the divestiture package until com-

pletion of the divestiture and to ensure that Lafarge Tarmac is taking the steps necessary to achieve an effective and timely disposal. The monitoring trustee should be required to report to the CC on at least a monthly basis on the current trading of the divestiture package benchmarked against the performance of Lafarge Tarmac's other three cement plants in GB. The first of these reports should include details of any changes to the asset register at either the Caudon or Tunstead plant (whichever is being divested) since 1 September 2013, with an update on any changes to the relevant asset register every six months.

- A divestiture period should not exceed [X] months from the date of signing the final undertakings, or the issuance of an Order (whichever may be applicable). Lafarge Tarmac should periodically provide the CC with an update on the progress of the divestiture process against a timetable to be agreed with the CC. The CC reserves the right to appoint a divestiture trustee should divestiture not be implemented within the specified divestiture period; or if the CC reasonably expects that an effective disposal would not be achieved within this divestiture period.

How this remedy addresses the AEC and/or resulting customer detriment

13.8 In the provisional decision on remedies, we had proposed a remedy requiring the divestiture of either the Caudon or Tunstead plant by Lafarge Tarmac, broadly as specified in Figure 13.1. We set out below the views of parties in their responses to the provisional decision on remedies concerning the effectiveness of this remedy in addressing the AECs and our own consideration of this issue. Parties' more general views on the effectiveness of a cement plant divestiture remedy are set out in Appendix 13.1 and Appendix 13.2, Annex A.

- *Parties' responses to the provisional decision on remedies concerning the effectiveness of the remedy*

13.9 Lafarge Tarmac told us in its response to the provisional decision on remedies that a divestiture of either its fully utilized Caudon or fully utilized Tunstead plant would result in an upward pressure on cement prices, given that the effect of this remedy was more likely to result in reduced market output and higher unit production and logistics supply costs for both Lafarge Tarmac and the new entrant (relative to Lafarge Tarmac's current production and logistics supply cost levels).⁶ It argued that there was no reason to believe that this remedy would be effective, given that the creation of HCM had already given rise to a 'genuine increase in capacity outside the alleged coordinating group', and given the 'substantial' excess capacity available to CRH following its recent acquisitions of import terminals.⁷ Lafarge Tarmac explained that there was no reason to conclude that a new entrant would destabilize prevailing market conditions, or at least, no greater ability than would HCM and CRH, which in contrast to the new entrant resulted in increases in the volume placed on the external market. It further argued that without Lafarge Tarmac's expertise in running the cement plant efficiently, and because a single plant operator would be less able to ensure continuity of supply following a plant breakdown, the volumes of the divested plant may be expected to fall. Moreover, as the efficiencies of scale would be removed (such as purchasing economies) and greater maintenance costs and longer kiln shutdown periods would be required for a single plant operator than when oper-

⁶ Lafarge Tarmac response to the provisional decision on remedies, p.45 (11 November 2013).

⁷ *ibid*, paragraph 78.

ated by Lafarge Tarmac, the new entrant would at the outset have a higher cost base than under Lafarge Tarmac's ownership.⁸

- 13.10 MI's response to the provisional decision on remedies focused on our provisional view that a purchaser of a cement plant should not also be another GB cement producer, which would exclude MI (HCM) from bidding for the divested cement operations.⁹ We consider MI's arguments in its submissions in paragraphs 13.40 to 13.54 below, as part of our assessment of the effectiveness of this remedy.
- 13.11 Aggregate Industries told us in its response to the provisional decision on remedies that [redacted].¹⁰ Its response also covered its views on the inclusion of RMX plants in the divestiture package and purchaser suitability, and these are considered separately as part of our consideration of the design of this remedy.
- 13.12 F E Gilman told us that the proposed package of remedies as set out in the provisional decision on remedies was 'carefully considered, workable and appropriate in that they seem to be the minimum which will be likely to achieve the desired results'.¹¹
- 13.13 BDS told us that the package of remedies set out in the provisional decision on remedies appeared 'reasonable' and that they satisfied the issues identified by the CC. It identified two issues for the CC to consider in relation to Lafarge Tarmac's incentives concerning the type of purchaser it might seek for the divestiture package; and the purchaser suitability and potential implications of Aggregate Industries as a buyer of a divested cement plant under this remedy.¹² We consider these points when we consider the design of this remedy.
- 13.14 VolkerFitzpatrick, a UK engineering and construction firm and purchaser of cement, told us that it considered that there were already five major cement suppliers in the UK market, namely Lafarge Tarmac, Hanson, Cemex, Premier (CRH) and HCM, and that there already seemed to be 'enough competition'.
- 13.15 The ISBA told us that the divestiture of either the Cauldon or Tunstead plant formed the most effective element of our proposed package of remedies, and added that it was not convinced that the two transparency-reduction measures would effectively restrict the ability of the Top 3 cement producers to coordinate. However, it considered that both structural and behavioural changes were necessary. It also told us that allowing MI to acquire the divested cement plant would result in an enlarged MI that would 'only serve to ramp up incentives for coordinating among cement producers'.¹³

- *Our assessment of how the remedy addresses the AEC/customer detriment*

- 13.16 A cement plant divestiture by a Top 3 cement producer¹⁴ would result in a tightly defined but nonetheless significant structural change in the GB cement markets. Such a divestiture would increase the share of the GB cement markets held by non-coordinating producers, relative to the coordinating group. This particular outcome

⁸ *ibid*, paragraph 77; Appendix—report by RBB Economics 'Consumer detriment and profitability: a response to the provisional decision on remedies', section 4.2

⁹ [MI response to the provisional decision on remedies](#), paragraphs 1.2, 6.1 & 6.2.

¹⁰ [Aggregate Industries response to the provisional decision on remedies](#), pp1–2.

¹¹ [F E Gilman response to the provisional decision on remedies](#).

¹² [BDS response to the provisional decision on remedies](#).

¹³ [ISBA response to the provisional decision on remedies](#).

¹⁴ For the avoidance of doubt, a divestiture of a cement plant by HCM was not considered as part of this remedy, primarily on the grounds that it operates only one cement plant and a divestiture of this cement plant would not therefore affect the structure of the GB cement markets.

could result either from an acquisition of a cement plant by a new entrant that is currently not active in the GB cement markets, or an expansion of an existing non-coordinating firm in the GB cement markets, ie MI (HCM) or a cement importer. In the provisional decision on remedies, we had provisionally concluded that the effectiveness of a cement plant divestiture remedy would be substantially greater if the divestiture resulted in the creation of a new GB producer, rather than increasing the share of supply held by an existing GB cement producer. We had therefore provisionally decided that the specification of this remedy should exclude the sale of any divested cement plant to an existing GB cement producer, including MI. As noted earlier, MI did not agree with this provisional decision and told us that this view was premature on the basis that the CC had not yet assessed whether and how the expansion of HCM's capacity through its acquisition of any of the divested assets could remedy the AECs.¹⁵ MI submitted that it should not be precluded from any sale process arising from the implementation of our package of remedies.

13.17 In considering the effectiveness of this remedy, we first set out our views on the extent to which a cement plant divestiture remedy that resulted in the creation of a new GB cement producer would undermine and thereby address the coordination that we have found in the GB cement markets. We conduct this assessment by particular reference to the three conditions necessary for coordination to be sustained (see paragraphs 8.202 to 8.236). We then consider whether a cement plant divestiture to an existing GB cement producer would be similarly effective (see paragraphs 13.40 to 13.54 below).

○ *Assessment of the remedy's impact on the sustainability of coordination*

13.18 We consider below the impact of a cement plant divestiture on the three conditions necessary for coordination to be sustained, namely that:

- (a) firms must be able to reach an understanding and monitor the terms of coordination;
- (b) coordination must be internally sustainable; and
- (c) coordination must be externally sustainable.

13.19 We discuss below how this remedy has an impact on each of these three conditions and the overall impact on the incentive and ability of the Top 3 cement producers to sustain a coordinated outcome.

○ ○ *Impact on ability to reach an understanding and monitor coordination*

13.20 In paragraph 8.419, we found that one of the factors that contributed to the ability of the GB cement producers to have a strong awareness of each other's actions, and to anticipate each other's future actions, was the high level of market concentration, where nine of the ten cement plants in GB are owned by the three firms within the coordinating group (who are also the Top 3 cement producers). We found that this high level of awareness had led to strategic interdependence in their competitive behaviour and to coordination between the Top 3 cement producers.

13.21 The impact of a cement plant divestiture on the ability of the Top 3 cement producers to reach an understanding and monitor the terms of coordination arises from the

¹⁵ [MI response to the provisional decision on remedies](#), paragraph 4.7.

reduced market transparency that would result from a more fragmented market structure, combined with the need for firms within the coordinating group to take into account in their decisions the independent competitive actions of any new producer that is active in the GB cement markets. We considered that this impact would be significantly greater if the divestiture resulted in the creation of one or more new entrants into GB cement production (our reasoning for why we considered a divestiture of a cement plant to an existing GB cement producer would not be as effective is set out in paragraphs 13.40 to 13.54 below). We also considered that such an impact to reduce the ability of the coordinating firms to reach an understanding on the terms of coordination could not be emulated by the cement importers given the different cost structures faced by cement importers and their relative cost disadvantage compared with the GB cement producers (see paragraphs 7.122 to 7.124).

13.22 We considered that the greater the number of GB cement producers, in particular the number of non-coordinating producers, the greater the potential reduction in market transparency as the scope for, and relative significance of, independent rather than coordinated action increases.

13.23 The resulting reduction in market transparency and increase in strategic uncertainty may be expected to have a significant impact on the ability of the Top 3 cement producers to monitor the terms of coordination. We therefore concluded that a cement plant divestiture may be expected to have the effect of making it more difficult for the Top 3 cement producers to detect changes in each other's behaviour and anticipate the actions of the individual non-coordinating producers, and in turn to reach an understanding between themselves (or with any currently non-coordinating producer) on the terms of any coordination.

◦ ◦ *Impact on the internal sustainability of coordination*

13.24 A cement plant divestiture by any of the Top 3 cement producers would result in a reduction in its share of industry profits and benefits from any coordination, thereby weakening its incentives to coordinate.

13.25 Whilst the incentives of the other coordinating firms may not be directly affected by a divestiture, a stronger external constraint—including the owner of the divested cement plant, as well as existing non-coordinating suppliers—would in turn undermine the incentives of other firms to coordinate (see also paragraphs 8.203(c), 13.27 and 13.28). If the reduced incentive of the divesting party to coordinate resulted in it no longer being part of any coordinating group, this remedy would further undermine external, and hence internal, sustainability of coordination by further increasing the collective size of the non-coordinating producers in the GB cement markets.

13.26 Other potential effects on the internal sustainability of coordination may depend on the identity of the divesting party and/or the cement plant to be divested. For example:

(a) A cement plant divestiture by Lafarge Tarmac would reduce the size of its cement operations which could be expected to reduce its ability and incentive to bear the costs of any coordination. This could in turn result in coordination being more difficult to sustain if there is greater strategic uncertainty among the Top 3 cement producers in the absence of a firm with a clear incentive to bear the future costs of any coordination.

(b) A cement plant divestiture by either Hanson or Cemex could have the effect of reducing the amount of excess production capacity held by either party, which we found in paragraph 8.317 provided them with an effective punishment mechanism that supported the internal sustainability of coordination. For example, if a divest-

ing party wished to recover some of its lost sales and profits, it may choose to increase the utilization of its spare capacity at its remaining cement plant(s).

o o *Impact on the external sustainability of coordination*

13.27 Finally, and in our view critically, the creation of a new entrant(s) in the GB cement markets would lead to an enlarged group of non-coordinating producer(s) at the expense of the coordinating group. This may be expected to disrupt the GB cement markets and undermine any coordination between the Top 3 cement producers, thereby substantially weakening the external sustainability of coordination. We explain in the next subsection our reasoning why a cement plant divestiture to an existing non-coordinating GB cement producer would be substantially less effective than a divestiture to a new entrant.

13.28 An enlarged group of non-coordinating producers in the GB cement markets could also be expected to reinforce the impact of the remedy on the other two conditions necessary for coordination to be sustained, whereby:

(a) an enlarged group of non-coordinating producers would increase the overall scale and significance of the disruption to the ability of any coordinating group to reach an understanding and monitor the terms of coordination; and

(b) the collective competitive constraint from an enlarged group of non-coordinating producers would reduce the ability and incentives of the coordinating group to maintain a coordinated outcome and thereby weaken the internal sustainability of coordination.

o *Conclusions on the effect of a cement plant divestiture on the sustainability of coordination*

13.29 Based on the assessment above, we expect a cement plant divestiture to change the structure of the GB cement markets through the creation of a new GB cement producer and thereby make a substantial contribution to addressing the coordination AEC and the resulting customer detriment of higher cement prices. It would do this by disrupting and weakening the extent to which coordination may be sustained, with the result that customers are offered prices that are lower than under current levels of coordination.

13.30 We considered a number of counterarguments to this assessment. First, [redacted] cement importers submitted (see Appendix 13.2, Annex A) that one possible consequence of more competition in the GB cement markets may be that lower prices from the GB cement producers could price cement imports out of the GB cement markets. Should this happen, one possible effect of more competition could be to reduce the share of the market held by cement importers, and any competitive constraint (notwithstanding its limitations¹⁶) that comes from them.

13.31 We considered these submissions carefully. We considered that it was far from clear that it is a desirable feature of the current operation of the GB cement markets that the financial viability of one element (ie the cement importers) within the current market structure should rely, to some extent, on the higher prices that result from the coordination AEC. In our view, the possible risk that the future competitive constraint from cement imports could reduce if prices were lower emphasizes the need for a

¹⁶ We set out the reasons why we considered that cement importers provided a limited competitive constraint on GB cement producers in paragraph 7.123.

market structure that includes participants which can operate sustainably in a more competitive environment. This would ensure that the ability of non-coordinating firms to exert a competitive constraint on any coordinating group, and therefore contribute to undermining any coordination that exists, is not compromised by the effects of lower prices arising from greater competition. We considered that such a strong and sustainable group of non-coordinating firms was most likely to be achieved by the transfer of cement production capacity from the coordinating group to a new entrant such that the remedy both strengthens and enlarges the group of non-coordinating producers within the GB cement markets.

- 13.32 Secondly, we considered Lafarge Tarmac's submission that a divestiture of one of its cement plants would not give a buyer the ability to expand output and therefore reduce prices given that the majority of its cement plants were operating at capacity (see Appendix 13.2, Annex A). We noted that this submission was potentially relevant to the selection of any cement plant to be divested and to the overall effectiveness of a remedy requiring the divestiture of a cement plant operating at or near to its full capacity.
- 13.33 Our assessment of the suitability of cement plants as the basis of a divestiture remedy is set out in paragraphs 13.62 to 13.77 and Appendix 13.2, Annex D. This assessment takes into account a number of different considerations, including the different aspects of a cement plant's efficiency, its total production capacity and the impact that divestiture would have on the divesting party's competitive capabilities. The availability of excess capacity represents one such dimension that could be taken into account in determining a cement plant's suitability as a basis for a divestiture, but it is neither the only consideration nor necessarily the most important. For example, whilst Lafarge Tarmac's Dunbar plant has [X] excess capacity, its geographic location and other characteristics limit its suitability as the basis for a divestiture to create a new GB cement producer.
- 13.34 We did not agree with Lafarge Tarmac that divesting a cement plant operating at full capacity could not result in an increase in GB cement production. For example, we note that Lafarge Tarmac's Dunbar plant was operating at [X] per cent of grey cement production capacity during 2012, and therefore Lafarge Tarmac had [X] scope to increase volumes at the Dunbar plant if Lafarge Tarmac wished to recover any volumes lost through divestiture of one of its other cement plants. Moreover, spare capacity is available at both Cemex's and Hanson's cement operations that could be utilized, particularly if coordination were to break down or significantly weaken as a result of the creation of a new GB cement producer (as we expect it to).
- 13.35 Furthermore, Lafarge Tarmac's argument does not acknowledge the additional competitive tension and constraint that any new entrant (in addition to the four existing GB cement producers) would bring to the market and its potential to put downward pressure on cement prices, even if domestic production volumes were to remain broadly similar. We considered that the impact of the creation of a new GB cement producer would go further than its ability to expand volumes, in particular in relation to its impact on the three conditions necessary for coordination to be sustained; the structural change that would result in the GB cement markets; and the increase in the collective share of the non-coordinating producers relative to the coordinating group.
- 13.36 We therefore concluded that a cement plant divestiture could be effective in addressing the coordination AEC and result in lower prices without the need for excess capacity for future expansion at the divested cement plant, as Lafarge Tarmac has suggested.

- 13.37 Thirdly, we considered Lafarge Tarmac's submission (see paragraph 13.9 above) that a new entrant without Lafarge Tarmac's economies of scale or expertise would face higher costs than Lafarge Tarmac currently incurred. We have not seen any evidence to suggest that a single cement plant operator would not be able to compete in the GB cement markets, in particular when operating a low-cost and efficient cement plant. We note that Tarmac and HCM have each been able to compete in the GB cement markets with a single cement plant. Furthermore, in our consideration of profit margins and profitability, we did not find Tarmac to be the highest-cost or least profitable GB cement producer, despite operating a single cement plant.
- 13.38 Finally, we considered Lafarge Tarmac's argument in Appendix 13.2, Annex A, that coordination was a 'conduct feature' and therefore should only be addressed by behavioural remedies. We did not accept this argument. Given the nature of the problem that we found and the need to identify as comprehensive a solution as is reasonable and practicable to the AECs and/or the resulting customer detriment,¹⁷ it was necessary for us to consider both structural and behavioural remedies. Lafarge Tarmac's submission did not, in our view, acknowledge the importance of the structural features we have identified as contributing to coordination (see paragraphs 8.431 to 8.434). A cement plant divestiture has the potential to address a number of the structural features giving rise to coordination promptly, directly and at source and is hence an appropriate response to the coordination AEC.
- 13.39 We concluded that a cement plant divestiture (in combination with the other remedy measures we have decided should form part of our package of remedies) was capable of significantly reducing the incentive and ability of the Top 3 cement producers to coordinate, thereby undermining coordination in the GB cement markets. We also noted that the design of any potential divestiture package would play an important role in determining the extent to which this remedy would have this impact. We consider design issues in paragraphs 13.55 to 13.103.
- *Assessment of the effectiveness of a cement plant divestiture to an existing GB cement producer*
- 13.40 We considered whether the divestiture of a cement plant to an existing GB cement producer would be similarly effective. We took the view in both the Remedies Notice and the provisional decision on remedies that a divestiture that simply involved divesting a cement plant from one member of the coordinating group (ie Cemex, Hanson and Lafarge Tarmac) to another was very unlikely to be an effective remedy. No party suggested that this would be a credible option. We therefore did not consider it necessary to analyse this possibility further.
- 13.41 A sale to MI raises different issues, in that MI is a new participant in the GB cement markets and we have not found MI to form part of any coordinating group.
- 13.42 In its response to the provisional decision on remedies, MI told us that by excluding all GB cement producers from buying a divested cement plant, no distinction was being made between the 'coordinating producers' and HCM, a 'non-coordinating producer' that had 'not contributed to the AEC'.¹⁸ It argued that a divestiture of a cement plant to HCM would still meet the CC's aim of increasing the share of the GB cement markets held outside the coordinating group.¹⁹

¹⁷ Section 134(6) of the Act.

¹⁸ [MI response to the provisional decision on remedies](#), paragraph 4.1.

¹⁹ [ibid](#), paragraph 4.3.

13.43 MI argued that, as an acquirer of the divested cement plant, it had ‘greater potential to address the AEC’ than an acquisition by a ‘fifth competitor’.²⁰ To support its position, MI told us that:

(a) HCM had introduced a ‘new competitive dimension’ into the GB cement markets on price and quality of service, and HCM was ‘independent in its approach’. Specifically MI told us that: [REDACTED].²¹

(b) Having made a substantial investment, MI told us that it was committed to the GB cement markets, and had the ‘expertise and resources, and access to further expertise and resources, to compete aggressively in these markets’. It added that [REDACTED].²²

(c) A second cement plant would provide HCM with ‘scheduling flexibility and economies of scale that would afford significant cost savings’, and result in HCM being a ‘more efficient producer’.²³

(d) MI told us that [REDACTED].²⁴

13.44 MI also argued that an acquisition by MI would not give rise to regulatory concerns,²⁵ as well as provide a ‘swift resolution of the AEC’, as MI was likely to conclude a deal more quickly (based on its recent experience of acquiring the Hope divestiture package and its familiarity with the market). It also told us that this would result in the competitive benefits for the market being realized sooner, and that [REDACTED]. It also considered that including MI as ‘another potential bidder’ to the sale process would mean that the price paid for the divestiture package was ‘likely to be higher’, thereby making Lafarge Tarmac a ‘more cooperative seller’.²⁶ In market share terms, MI estimated that if it acquired a divested cement plant, then HCM would have [REDACTED] per cent market share, which it considered [REDACTED] as HCM with [REDACTED] per cent and a fifth competitor with [REDACTED] per cent.²⁷

13.45 We considered these submissions carefully. In so doing, our focus was on whether the effectiveness of this remedy would be reduced or enhanced, and to what extent, if MI were to acquire the divested cement plant rather than a new entrant. We therefore considered the implications of different divestiture scenarios on the structure of the GB cement markets and on the incentives for coordination, depending on whether the divestiture was made to MI or to a new entrant. In conducting this assessment, we had regard to the importance of this measure to the effectiveness of our overall package of remedies in addressing the coordination AEC (see paragraphs 13.362 to 13.408) and the various considerations limiting the scope of this measure to divestiture of a single cement plant (see paragraphs 13.78 to 13.86).

13.46 We noted first that, as an existing market participant (albeit a relatively recent market entrant through its acquisition of HCM), MI may have some advantages over a new entrant, eg in relation to knowledge of the GB cement markets and management experience. However, we noted that MI had been able to acquire these capabilities as a new entrant to the GB cement markets and that through our oversight of purchaser suitability we would be able to ensure that any purchaser of a cement plant

²⁰ *ibid*, paragraph 8.2.

²¹ *ibid*, paragraph 8.2(a) & (b).

²² *ibid*, paragraph 8.2(b).

²³ *ibid*, paragraph 8.2(d).

²⁴ *ibid*, paragraph 8.2(d).

²⁵ *ibid*, paragraph 8.2(c).

²⁶ *ibid*, paragraph 8.3.

²⁷ Market shares [REDACTED]. Source: [MI response to the provisional decision on remedies](#), paragraph 5.2.

would have the necessary capabilities to compete effectively in the GB cement markets. We therefore concluded that this was not a significant argument in favour of divesting to an existing GB cement producer, rather than to a new entrant.

- 13.47 Secondly, we also had some reservations about how competition in the GB cement markets might develop in future if HCM acquired a second cement plant. Such a scenario would result in greater symmetry across the cement operations of the four existing GB cement producers (eg in terms of relative market shares) and also in relation to other dimensions of their overall businesses, including their respective levels of vertical integration. This increase in market symmetry could increase the risk of coordination involving all four GB cement producers, rather than having, as at present, one producer that currently sits outside the coordinating group. We considered that such risks would be substantially lower in the event of divestiture to a new entrant with a single cement plant, as market asymmetry overall would be maintained or reinforced under such a market structure.
- 13.48 We next considered the impact of different divestiture scenarios on the ability of GB cement producers to sustain coordinated outcomes.
- 13.49 As set out in paragraphs 8.429 to 8.433, we found high market concentration to be an important structural feature of the GB cement markets that contributed significantly to the levels of market transparency and awareness among market participants. This high level of awareness, in turn, has contributed to the ability of the Top 3 cement producers to sustain market coordination.
- 13.50 We considered that the ability of any coordinating firm to anticipate the competitive actions and strategies of its competitors is likely to reduce significantly with a larger number of competitors outside the coordinating group, each acting independently in accordance with its own competitive strategies.²⁸ In particular, firms within any coordinating group are more able to determine the source of any change in market outcomes with a smaller number of market participants to monitor, enabling them to detect and address any deviations from coordinated behaviour. The creation of a fifth GB cement producer creates a further, and more importantly a different, source of uncertainty for the coordinating firms.
- 13.51 Furthermore, the increase in strategic uncertainty resulting from a cement plant divestiture may also be expected to affect the incentives and strategies of non-coordinated producers. In particular, with two GB cement producers outside any coordinating group, it is less likely that non-coordinating producers might pursue a strategy of benefiting from coordination by producing at, or near to, capacity while pricing within the framework established by the coordinating group (as had been the case with Tarmac). This is because the larger number of suppliers outside the coordinating group would need to compete with each other in order to sell at capacity, and hence the actions of any coordinating group are likely to have less of an impact on the overall level of pricing that they can achieve.
- 13.52 In this context, we noted that an enlarged or enhanced MI (HCM) with two cement plants would still result in a single GB cement producer outside the coordinating group, with HCM likely to operate its two cement plants as part of a single national cement operation. In our view, an acquisition by MI could not replicate or emulate the impact and disruption that two independent operators of GB cement plants could have on the GB cement markets. Given our conclusion that a single cement plant

²⁸ Whilst there are a number of independent GB cement importers, we considered that their ability either individually or collectively to disrupt any coordination was significantly undermined by the fact that they faced different cost structures and cost disadvantages relative to the GB cement producers.

should be divested (see paragraphs 13.78 to 13.86), an increase in the number of non-coordinating GB cement producers can only be facilitated through an acquisition by a purchaser that is not a current GB cement producer. Given this, we took the view that a remedy that increased the number of GB cement producers would be substantially more effective at reducing market transparency and disrupting the strategic interdependence of the coordinating firms than a remedy that resulted in the expansion of HCM (the only non-coordinating GB cement producer at present). Consequently, whilst an acquisition of the divested cement plant by MI would result in a new type of market structure involving four multiplant operators, we concluded that this would not provide the same disruptive impact we would expect to see with two GB cement producers outside the coordinating group, each pursuing its own independent competitive actions and strategies.

- 13.53 We therefore concluded that the effectiveness of this remedy would be significantly greater if it were to result in an increase the number of GB cement producers. A cement plant divestiture that resulted in the creation of a new GB cement producer would address important aspects of the GB cement markets' structural susceptibility to coordination directly and at source. By contrast, we were concerned that a divestiture to MI would not be an effective remedy and that it would significantly reduce the likely beneficial impact of this remedy on the operation of this market relative to a divestiture to a party which did not currently produce cement in GB.
- 13.54 We therefore decided to exclude a purchase of the divested cement plant by any existing GB cement operator from the specification of this remedy.

Remedy design considerations

- 13.55 In this subsection, we set out our assessment of the scope of the divestiture package and the issues relating to purchaser suitability.

- *Scope of the divestiture package*

- 13.56 In determining the scope of a possible cement plant divestiture package, we considered the criteria for identifying a suitable cement plant(s) that could provide an effective competitive constraint on the coordinating group, and was capable of being divested to a suitable purchaser. As part of this assessment, we were concerned with identifying and addressing potential composition risks.²⁹ Our consideration of this issue is structured as follows:

- (a) in paragraphs 13.57 to 13.61, we set out some general considerations that have informed our approach;
- (b) in paragraphs 13.62 to 13.77, we summarize our assessment of which of the nine GB cement plants operated by Lafarge Tarmac, Hanson and Cemex is capable of providing the basis for an effective divestiture remedy;
- (c) in paragraphs 13.78 to 13.86, we consider the number of cement plants to be divested in the light of our findings about the available options; and

²⁹ Composition risks are risks that the scope of the divestiture package may be too constrained or not appropriately configured to attract suitable purchasers or may not allow a purchaser to operate as an effective competitor in the market (the Guidelines, [Annex B, paragraph 6](#)).

(d) in paragraphs 13.87 to 13.103, we consider the extent to which downstream RMX plants (if any) should accompany any cement plant divestiture in order to achieve an effective solution.

o *General considerations*

13.57 The following issues are of particular relevance for the design of an appropriate cement plant divestiture package:

- (a) the cement production capacity of any divested plant;
- (b) its location, geographic reach and distribution capabilities;
- (c) availability of raw material reserves;
- (d) production efficiency;
- (e) the extent of vertical integration with downstream products, including RMX; and
- (f) financial considerations.

13.58 Our assessment of these issues is set out in Appendix 13.2, Annex C. This analysis led us to draw the following conclusions:

- (a) From the point of view of potential purchasers, the 'ideal' cement plant divestiture package would involve the divestiture of a modern dry-process cement plant which operates two active kilns and has sufficient clinker production and grinding capacity to produce at least 1 Mt of cement each year.
- (b) Whilst a central location would be preferable, we considered that the geographic reach and distribution capabilities of the cement plant were also relevant, and could potentially overcome disadvantages associated with its site location. We concluded that it would be necessary for any divestiture of a cement plant to be accompanied by a network of depots in order to enhance its distribution capabilities and consequently its customer and geographic reach. For a rail-linked cement plant, this should include the rail-linked depots on its rail network, in order to enable it to make full and effective use of its rail distribution capabilities.
- (c) The cement plant should also be located on, or close to, its own natural source of limestone, the key raw material for clinker production. The availability of raw material reserves will underpin the longevity of the competitive presence of the cement plant, and potentially its ability to produce at full capacity without the need to conserve current reserves for future production. We considered that purchasers would need to have confidence that there would be sufficient permitted limestone reserves to allow at least 30 years of cement production, and that any divestiture of a cement plant should also be accompanied by the divestiture of the limestone quarry that supplies it with raw materials, unless suitable alternative arrangements can be put in place.
- (d) In relation to the extent to which the cement plant should be divested together with downstream production facilities, we considered that this would largely depend on the circumstances of the specific purchaser.
- (e) We should avoid putting too much weight or emphasis on any single factor listed above, for example on its production capacity or distribution capabilities, especially at the expense of some of the other considerations which, whilst on their own

may not be significant, taken together may significantly contribute to the effectiveness of a new entrant.

- 13.59 When identifying which cement plant has some, or all, of the characteristics that would ensure that its divestiture would be an effective remedy, we recognized that our eventual choice is necessarily constrained by the characteristics of the existing GB cement plants. In Appendix 13.2, Annex B, we set out a description of all ten cement plants (ie having the capability to produce clinker), as well as other supporting cement facilities in GB, together with a map showing their locations.³⁰
- 13.60 In its response to the provisional decision on remedies, Lafarge Tarmac argued that the CC's 'starting point' should not be what would form an 'ideal' cement package, but should be the 'minimum' that was required to address the AEC. It argued that the criteria proposed by the CC resulted in 'significant gold-plating' that went far beyond what was required to achieve the CC's objectives.³¹
- 13.61 We do not accept this criticism of our approach. Given our view that a single cement plant should be divested under this remedy (see paragraphs 13.78 to 13.86), as a matter of practicality and as the 'minimum' required to address the AEC, we sought to ensure the effectiveness of this divestiture by selecting a cement plant that could compete effectively on a stand-alone and sustained basis. In so doing, we had regard to the actual characteristics of the limited number of cement plants in GB, rather than the need for the divested plant to conform to an 'ideal'.
- *Selecting cement plants for possible divestiture*
- 13.62 Based on the above considerations, we assessed which of the Top 3 cement producers' nine cement plants might form the basis of a possible divestiture under this remedy. As part of this assessment, we sought to ensure that following any divestiture, there would be five GB cement producers each capable of competing robustly and independently for business. This necessarily involved consideration of the competitive capabilities of the divesting party as well as the acquirer of the divestiture package following the divestiture.
- 13.63 The details of our assessment of which cement plant (or plants) might form the basis for an effective divestiture remedy are set out in Appendix 13.2, Annex D.
- 13.64 Based on this assessment, we concluded that of the nine cement plants owned by the Top 3 cement producers,³² only Lafarge Tarmac's Cauldon and Tunstead plants had the potential to represent a suitable basis for a divestiture remedy.
- 13.65 In its response to the provisional decision on remedies, Lafarge Tarmac told us that there was no basis for requiring Lafarge Tarmac to divest a cement plant, and that the CC had relied on an argument that Lafarge Tarmac should bear the cost of a cement plant divestiture because: (a) Lafarge was the leader of the coordination; and (b) Lafarge benefited from coordination as the largest cement producer, and that this, together with its relatively low extent of vertical integration, gave it an incentive to take a greater proportion of any costs of coordination.³³

³⁰ Our reason for not considering the Hope plant as a potentially suitable basis for divestiture is set out in the footnote to paragraph 13.16.

³¹ [Lafarge Tarmac response to the provisional decision on remedies](#), paragraph 66.

³² We did not consider the divestiture of HCM's Hope plant as a suitable basis for divestiture given that HCM operates only one cement plant and a divestiture of this cement plant would not therefore affect the structure of the GB cement markets.

³³ [Lafarge Tarmac response to the provisional decision on remedies](#), paragraph 56.

- 13.66 In response to Lafarge Tarmac's argument above, we considered that Lafarge Tarmac had largely misrepresented our reasons for selecting either the Cauldon or Tunstead plants as a suitable basis for divestiture. In our assessment of which cement plant would form the basis of a suitable divestiture package, we had specifically considered each of the Top 3 cement producers' nine cement plants. Our conclusions are based on meeting our primary objective to remedy the AEC and/or resulting customer detriment, by creating an effective new competitor, whilst having regard to the competitive capabilities of the divesting parties and their ability to compete robustly post-divestiture (see paragraph 13.62). The fact that Lafarge Tarmac currently operates the greatest number of cement plants and has the greatest cement production capacity in GB, together with the nature of the cement plants Lafarge Tarmac currently operates, mean that, compared with possible divestitures by either of the other two Top 3 cement producers: (a) Lafarge Tarmac will have a greater ability to compete robustly following a single cement plant divestiture and (b) the new entrant will itself have a greater ability to compete effectively. While we found that Lafarge had played a specific role in coordination (see paragraph 8.423), this was not a factor in our selection of cement plants suitable for divestiture.
- 13.67 We concluded that between the Cauldon and Tunstead plants, a divestiture of the Tunstead plant represented the stronger of the two cement plants on a stand-alone basis, in terms of the Tunstead plant's ability to exert a competitive constraint across a wide customer catchment area by virtue of it being a rail-linked cement plant, together with the added flexibility of having permission to build a second kiln which, once built, would double its production capacity and also reduce a single cement plant operator's reliance on one kiln. We compared the two cement plants further by reference to a variety of other factors in line with our assessment in Appendix 13.2, Annex D.
- 13.68 At the time we published the provisional decision on remedies, we noted that the Tunstead plant had significant limestone reserves available to it (both in terms of permitted reserves and available limestone resources), whilst there were currently [redacted] years of permitted limestone reserves remaining at the Cauldon plant from its Cauldon Quarry, which could be extended by a further [redacted] years through obtaining planning permission. In relation to its shale reserves, the Cauldon Quarry also had [redacted] years of permitted reserves, which could be extended by [redacted] years through obtaining planning permission.
- 13.69 Following the publication of the provisional decision on remedies, Lafarge Tarmac told us that the Cauldon Quarry had been granted 'in principle approval' to extend its limestone quarrying operations. [redacted]³⁴
- 13.70 Based on this update from Lafarge Tarmac, we were satisfied that there were sufficient reserves of limestone available at each of the Cauldon and Tunstead plants to ensure the sustainability of each cement plant on a stand-alone basis, and that this would ensure their respective access to the key raw material input in the longer term.
- 13.71 On this basis, in relation to the supply of limestone as a raw material into cement production:
- (a) Should the Cauldon plant be divested, the Cauldon Quarry that currently supplies it with raw materials (limestone and shale) should be included in the divestiture package.

³⁴ *ibid*, footnote 21 of paragraph 65(e).

- (b) Should the Tunstead plant be divested, there are two possible options which Lafarge Tarmac can explore given that the limestone quarry which supplies the Tunstead plant also supplies Lafarge Tarmac's lime operations: (i) Lafarge Tarmac could sell all, or part, of the limestone quarry to the buyer of the Tunstead plant; or (ii) Lafarge Tarmac could enter into a long-term supply agreement with the buyer of the Tunstead plant to guarantee its supply of limestone on arm's length terms.
- 13.72 The Cauldon and Tunstead plants also source some of their key raw materials from external suppliers (see Appendix 13.2, Annex C, Supplement 5). We would expect that a purchaser would review and, as necessary, renegotiate these contracts with suppliers of its choice, including the option to maintain existing suppliers where it is beneficial to do so.
- 13.73 Whilst the Cauldon plant sources its sand externally, the Tunstead plant sources its sand internally. This variation in the supply arrangements for sand also occurs across the different cement plants of the other GB cement producers (see Appendix 13.2, Annex C, Supplement 5), and therefore suggests that sand does not need to be supplied internally. We also noted that the consumption of sand at each of these cement plants was significantly smaller when compared with the other raw materials consumed at a cement plant. We therefore decided not to require the inclusion of the sand quarry currently supplying the Tunstead plant into the divestiture package (should the Tunstead plant be divested), on the basis that we did not consider it necessary for a divestiture remedy involving the Tunstead plant to be effective. We also considered that sand appears to be relatively easily sourced from third party sources, and therefore we concluded that it would not be necessary for a new entrant to have an internal supply of sand.
- 13.74 We also noted that whilst the Tunstead plant had been operated as a stand-alone cement plant prior to January 2013, ie under Tarmac's ownership, the Cauldon plant had been operated as part of a network alongside Lafarge's three other cement plants. We therefore considered that the network of depots currently used by, or 'attached to', the Cauldon plant may not necessarily represent the optimal configuration that would provide a purchaser with sufficient distribution capabilities to operate the cement plant on a stand-alone basis. Similarly, since the Tunstead plant is now part of Lafarge Tarmac's network of cement plants, we note that the depot network currently 'attached' to the Tunstead plant may have been affected by it no longer being a stand-alone cement plant. Therefore, a divestiture package involving either the Cauldon or Tunstead plant should include a network of depots suitable for a stand-alone cement plant, such that the configuration of its depot network provides the divested cement plant with distribution capabilities suitable and sufficient for the operation of the cement plant on a stand-alone basis in terms of both geographic and customer reach.
- 13.75 We compared the geographic reach of Lafarge Tarmac's Cauldon and Tunstead plants by looking at each cement plant's customer catchment area as a measure of its respective geographic reach (including around their respective depots). Based on our customer catchment area analysis in Appendix 13.2, Annex C, Supplement 4, we found that based on historic FY11 sales data, the customer catchment areas that covered 50 per cent of total sales volumes in FY11 (including both external and internal sales) were similar for both the Cauldon and Tunstead plants. We also found that the Tunstead plant achieved a wider customer catchment area during FY11 than the Cauldon plant at the 80 and 90 per cent customer catchment area levels. In Appendix 13.2, Annex C, Supplement 4, Table 10, our analysis showed that the 80 per cent customer catchment area was around [100–110] miles for the Cauldon

plant and [130–140] miles for the Tunstead plant. These distances can be viewed graphically in Appendix 13.2, Annex C, Supplement 4, Figure 4.

13.76 We note, however, that our analysis may have underestimated the potential customer catchment area of the Caudon plant for the following reasons: (a) our analysis was based on sales data for FY11, during which Lafarge had operated the Caudon plant as part of a network of cement plants which also included the nearby and rail-linked Hope plant. The fact that the Caudon plant was not serving customers located further away may have been a result of Lafarge's strategy in relation to the Caudon and Hope plants during FY11; and (b) if the Caudon plant had been operated on a stand-alone basis, it may have been operated differently, such that its operator may seek to serve customers located further away. In this regard, we would also note that should a purchaser of the Caudon plant wish to provide the plant with a rail connection, there may be a number of options available to it based on business need, eg Lafarge Tarmac provided details of these options which it had considered in 2011 (see Appendix 13.2, Annex C, Supplement 3). We would expect a purchaser of a stand-alone Caudon plant, notwithstanding that it is currently not rail-linked, to wish to reach customers in the South-East, where growth in demand is likely to be highest. In this regard, we would expect a purchaser to develop a strategy to extend the geographic reach of the Caudon plant into the relevant key markets.

13.77 We concluded that a divestiture of either the Caudon plant or the Tunstead plant could form the basis of an effective cement plant divestiture remedy.

- o *The number of cement plants to be divested*

13.78 We next consider the implications of a divestiture of either the Caudon or Tunstead plant on the market structure, and of the number of cement plant divestitures to require. This involved the consideration of a number of factors including issues of practicality and the structural and behavioural consequences of different divestiture scenarios. We first set out the views of parties in relation to the number of cement plants that should be divested, as set out in their responses to the provisional decision on remedies.

13.79 Lafarge Tarmac told us in its response to the provisional decision on remedies that the CC had not attempted to determine the 'optimum number of competitors that would produce the most beneficial outcome for consumers', and that the CC's assumption was that introducing one more competitor would 'entirely break down the alleged coordination'. It argued that this assumption required 'rigorous testing' and in relation to this argument, the 'probability that the divestment will actually eliminate or reduce coordination (and the extent it will do so in light of other remedies)'.³⁵ Lafarge Tarmac also submitted that it was 'arbitrary' to assume that having five GB cement producers would 'necessarily prevent coordination', when the CC had considered that HCM's entry had not, and would not, prevent coordination.³⁶ Lafarge Tarmac further argued that if the CC believed that a 'fifth player' was required to create market disruption, then it must address why HCM would not have the 'same disruptive effect',³⁷ and that it was 'insufficient' to consider a remedy to be effective 'merely because it would serve to reduce a particular measure of industry concentration'.³⁸ It explained that the 'relative concentration' in the industry was, to a large degree, a

³⁵ *ibid*, paragraph 74.

³⁶ *ibid*, paragraph 110(a).

³⁷ *ibid*, paragraph 76.

³⁸ *ibid*, paragraph 75.

'reflection of the nature of the scale economies and investments' that were required to operate in this industry.³⁹

- 13.80 In its response to the provisional decision on remedies, Cemex told us that to the extent that this remedy was necessary, only one cement plant should be divested.⁴⁰ It argued that a single cement plant divestiture would inevitably affect only one GB cement producer, but added that further divestitures of cement plants should not be required from other GB cement producers 'solely' to ensure that each producer was 'similarly affected' by this remedy. It added that such an approach would not be effective in addressing the AEC; would unnecessarily impose costs on Cemex and other producers; and be 'totally disproportionate' to the aim of remedying the AEC.⁴¹
- 13.81 For the purposes of our assessment, we first considered a scenario involving one cement plant divestiture. Under this scenario, with the non-coordinating GB cement producers, HCM and a new entrant, having cement production volumes of around [X] Mt and 1 Mt respectively, and combined with imported cement sales of [X] Mt, this gives non-coordinating firms a total potential sales volumes figure of [3–4] Mt, or [35–45] per cent combined market share (out of a total of 8.9 Mt). This compares with a current situation, ie without a new entrant, where the group of non-coordinating firms accounts for a combined [25–35] per cent of market share, ie comprising HCM ([X] Mt) and cement importers (1.2 Mt) with respective market shares of [X] and 13 per cent (see Appendix 13.2, Annex F). In this context, we considered that the market share collectively held by cement importers would not have the same competitive impact as market share collectively held by non-coordinating GB cement producers due to limits on the constraint from imported cement as set out in paragraph 7.123.
- 13.82 We took the view that, if feasible, a divestiture of two cement plants and the creation of two new entrants might further reduce the risk that coordination would remain in the market post-divestiture, or would re-establish itself at some future date. If two cement plants were to be divested, the relative shares of the GB cement markets accounted for by the coordinating group and the group of non-coordinating firms would become more evenly balanced, resulting in six GB cement producers operating in a relatively unconcentrated market.
- 13.83 However, our detailed assessment of GB cement plants in Appendix 13.2, Annex D, revealed a very limited number of cement plants that could provide a suitable basis for divestiture, particularly when taking into account the impact of a divestiture on the competitive capabilities of the divesting party and the need to act proportionately. Therefore, whilst we considered that the divestiture of two cement plants might maximize the opportunity for new competition, these considerations of effectiveness, practicality and proportionality strongly suggested that no more than one cement plant should be divested.
- 13.84 Divestiture of a single cement plant would, in our view, go a substantial way towards addressing the coordination in the GB cement markets, and disrupting the conditions necessary for coordination to be sustained, thereby contributing substantially to addressing the coordination AEC and the resulting customer detriment we found (see paragraphs 13.8 to 13.54).
- 13.85 Moreover, based on the analysis in Appendix 13.2, Annex F, where we consider the impact of a divestiture of one cement plant on market structure, we noted that a

³⁹ *ibid*, paragraph 29(e).

⁴⁰ [Cemex response to the provisional decision on remedies](#), paragraph 4.11.

⁴¹ *ibid*, paragraph 4.18.

divestiture of either the Cauldon or the Tunstead plant would result in Lafarge Tarmac's share of active clinker capacity reducing to [X] per cent (if the Cauldon plant was divested) or [X] per cent (if the Tunstead plant was divested). This compares with Hanson's current share of clinker capacity of [X] per cent. Therefore, a further consequence of the divestiture on Lafarge Tarmac would be to reduce its incentive to bear the costs of coordination.

13.86 In this way, a divestiture of either the Cauldon or Tunstead plant by Lafarge Tarmac would represent a tightly defined but nonetheless significant structural change that will have a substantial effect on the operation of the GB cement markets, particularly if introduced alongside other measures. It would:

- (a) leave the divesting party (Lafarge Tarmac) with a network of three cement plants capable of competing robustly post-divestiture;
- (b) result in the creation of an effective and sizable stand-alone competitor; and
- (c) reduce Lafarge Tarmac's ability and incentives to bear the costs of coordination.

o *Inclusion of RMX plants within the divestiture package*

13.87 We received a number of comments about this aspect of the remedy. These comments related to the following issues:

- (a) the need for any RMX plants to be included in the divestiture package (see paragraphs 13.89 to 13.92);
- (b) whether RMX plants to be divested should come from Lafarge Tarmac, or from other RMX producers (see paragraphs 13.93 to 13.99); and
- (c) whether (in contrast to the approach set out in Figure 13.1) the same number of RMX plants should be divested irrespective of the identity or preference of the purchaser (see paragraphs 13.100 to 13.103).

13.88 We consider these issues below.

13.89 In relation to the need for any RMX plants to be included in the divestiture package, Lafarge Tarmac told us that it was not necessary for it to divest any RMX plants, if the CC maintained that there was a 'market for a cement plant sale'. It told us that given the 'low barriers to entry' into RMX, a purchaser could acquire RMX plants from a third party or build them itself. Lafarge Tarmac argued that if a sale of RMX plants was required to realize 'full value for the sale of the cement plant', then any seller would be incentivized to do so. It argued that any 'mandatory sale' of RMX assets was 'almost bound' to be on 'disadvantageous terms' and result in a price for such assets below their 'full market value'.⁴² It told us that a more proportionate alternative would be for Lafarge Tarmac or a third-party RMX or concrete products producer to enter into a 'cement off-take agreement' for a 'fixed term' with the purchaser of the divested cement plant. Lafarge Tarmac argued that during this 'fixed term', the purchaser of the divested cement plant would be guaranteed a 'route to market' for the cement it produced, as well as giving it time to establish its own downstream business.⁴³

⁴² Lafarge Tarmac response to the provisional decision on remedies, paragraph 104.

⁴³ *ibid*, paragraph 108(e).

- 13.90 Our proposal to require the inclusion within the divestiture package of an option to purchase a limited number of RMX plants (subject to an upper limit on the ratio of the purchaser's internal cementitious requirement to its total acquired cement capacity of 15 per cent) is intended to ensure that a purchaser has an initial platform from which to compete and is not excessively vulnerable, as a new entrant, as a result of having the lowest level of vertical integration among the GB cement producers. It would then be for the new entrant to build on this initial RMX plant allocation if it wished to increase its level of vertical integration as part of its competitive strategy. We would also expect this requirement to assist with the marketability of the divestiture package—thereby reducing purchaser risk. We also proposed that, to the extent that RMX plants (or any level of vertical integration) below the 15 per cent limit were not required by any purchaser, then the purchaser would have the ability to opt out.
- 13.91 This approach was based on responses to the Remedies Notice, as well as the views from potential buyers during the CC's Anglo–Lafarge merger investigation, where the requirement for some downstream RMX operations was frequently cited as a necessary element of a cement plant divestiture package. We noted Lafarge Tarmac's suggestion that a cement offtake agreement might similarly provide a new entrant with some guaranteed demand for its output. However, we judged that this would not provide a purchaser with an outlet for its cement that was under its own control and hence was less likely to provide an effective basis for competition. Consequently, we would be unlikely to accept such an offtake agreement as an alternative to inclusion of RMX in the divestiture package during the remedies implementation stage, unless this was the clear preference of the purchaser and any such agreement was strictly time limited. In such circumstances, we would also need to be confident that the resulting arrangements would not compromise the independence or competitive capability of the acquirer of the divested cement plant.
- 13.92 We concluded that including an option for the purchaser also to acquire RMX plants as part of the divestiture package would significantly reduce composition and purchaser risks. Without such an option, the acquirer of the divestiture package could be excessively vulnerable during the initial period after divestiture, which could compromise the effectiveness of the remedy and also increase the risk that the divestiture package would fail to attract sufficient interest from suitable bidders.
- 13.93 Commenting on our provisional decision to require any divested RMX plants to come from Lafarge Tarmac rather than another GB cement producer, Lafarge Tarmac argued that requiring it to divest RMX plants because these would face the least disruption in their operations was not a 'sound reason' for imposing these costs entirely on Lafarge Tarmac.⁴⁴ It told us about the impact on its operations of divesting RMX plants:
- (a) Lafarge Tarmac argued that if RMX plants were divested in the 'immediate vicinity' of either its Cauldon or Tunstead plants, this would 'effectively result' in Lafarge Tarmac 'exiting that particular geographic region'. It added that this would undermine its ability to compete in that area and serve its customers.⁴⁵
 - (b) Lafarge Tarmac told us that its RMX plants were important as a 'route to market' for its aggregates, in addition to cement, and that the CC had not taken into account the effect of RMX plant divestitures on Lafarge Tarmac's ability to sell aggregates through RMX products.⁴⁶

⁴⁴ *ibid*, paragraph 106.

⁴⁵ *ibid*, paragraph 108(a).

⁴⁶ *ibid*, paragraph 108(b).

(c) Lafarge Tarmac argued that out of the Top 3 cement producers, it had the ‘smallest position’ in RMX, and that further divestiture would serve to reduce this position further. It argued that whilst the CC had considered the impact of a cement plant divestiture on Cemex and Hanson, it had not applied ‘such equivalent reasoning’ to the impact of RMX plant divestitures on Lafarge Tarmac’s RMX position. Based on a 50-mile radius around each of the Cauldon plant and the Tunstead plant, Lafarge Tarmac told us that in 2011, its RMX market shares were [redacted] and [redacted] per cent respectively, compared with [redacted] per cent for Cemex (within 50 miles of each of these cement plants), and compared with Hanson’s RMX market shares of [redacted] and [redacted] per cent within the 50-mile catchment areas for the Cauldon and Tunstead plants respectively. Lafarge Tarmac told us that this also showed that Cemex and Hanson both owned RMX plants around the Cauldon and Tunstead plants that could ‘readily form part of a divestment package’.⁴⁷

13.94 Lafarge Tarmac added that given the ‘close proximity’ of the Cauldon and Tunstead plants, a divestiture of RMX plants within the catchment area of either cement plant would leave the retained cement plant with ‘little or no vertical integration’.⁴⁸ It also told us that if the divested cement plant had national reach, then there was no reason why the RMX plants could not be divested further away from the cement plant, or even close to depots.⁴⁹

13.95 By contrast, Cemex told us that, to the extent that RMX plants were required as part of the cement plant divestiture package, these RMX plant divestitures should come from the party divesting the cement plant and not from any of the other GB cement producers.⁵⁰ It explained that if RMX plant divestitures were required of GB cement producers other than the party divesting the cement plant, then it would be concerned that a purchaser of a cement plant would be able to negotiate a ‘very low price for the RMX assets’ knowing that a party divesting RMX plants was required to do so.⁵¹ It mentioned that divestiture of profitable RMX plants, which ‘cross-subsidise’ loss-making RMX plants, would have a ‘severe’ financial impact on any vertically integrated producer, [redacted].⁵²

13.96 We considered that the RMX plants that are currently internally supplied by the cement plant being divested would generally represent suitable RMX plants for divestiture, on the basis that these RMX plants would face the least disruption in their operations as a result of a cement plant divestiture. There are likely to be logistical reasons why these RMX plants are currently supplied with cement from the cement plant in question, and therefore a divestiture of a cement plant and its internally supplied RMX plants would preserve any such logistical benefits. However, we also note that under this remedy, the distribution network of the divested cement plant on a stand-alone basis may well be different from the distribution network currently used by the divested cement plant operating as part of Lafarge Tarmac’s network of cement plants. Given this, and having regard also to the coherence of Lafarge Tarmac’s remaining RMX network, when implementing this remedy we would consider that any RMX plants capable of being economically supplied from the divested cement plant and its accompanying depot network are potentially suitable RMX plants to be divested alongside the cement plant.

13.97 We note that at this stage it is unclear how many RMX plants (if any) would ultimately be required by a purchaser, as this would depend on whether the purchaser already

⁴⁷ *ibid*, paragraph 108(c).

⁴⁸ *ibid*, paragraph 108(d).

⁴⁹ *ibid*, paragraph 109.

⁵⁰ [Cemex response to the provisional decision on remedies](#), paragraph 4.21.

⁵¹ *ibid*, paragraph 4.23

⁵² *ibid*, paragraph 4.24.

owned substantial downstream operations, or decided to buy a cement plant on a stand-alone basis and build its own RMX operations if required (although the latter was more unlikely in our view). Should a purchaser wish to acquire RMX plants up to the 15 per cent level of vertical integration we identified, the identification and selection of such RMX plants would largely be decided in bilateral negotiations between any purchaser and Lafarge Tarmac, subject to oversight by the CC. Entering into such negotiations, we would expect Lafarge Tarmac to take into account which RMX plants would have a particularly adverse impact on its own operations (including aggregates and cement) if they were to be divested, and would seek to offer alternative RMX plants to the purchaser to avoid this. We also noted that, depending on the identity of the purchaser, Lafarge Tarmac may seek to enter into aggregates supply agreements with the purchaser of its RMX plants to ensure an outlet for its local aggregates operations (see paragraph 13.93(b)).

- 13.98 We decided that the precise identification of any RMX plants to be divested would therefore be a matter to be determined as part of the implementation of remedies. In overseeing such a divestiture, the CC will seek to ensure that any RMX plants that are included in the divestiture package contribute towards a coherent geographic network for the purchaser taken in combination with the cement plant and the purchaser's other existing operations. We will interpret this requirement flexibly in the light of the needs of both Lafarge Tarmac and potential purchasers.
- 13.99 We considered that a requirement that a purchaser should be able to acquire RMX plants from a number of sellers would significantly increase the potential risk of not achieving an efficient and timely disposal. Given (a) the fact that the multiple sellers' incentives (eg Lafarge Tarmac, Hanson and Cemex) are unlikely to be aligned in relation to achieving an efficient and timely disposal, and (b) the need to establish a coherent RMX plant network for the purchaser of the divested cement plant, we took the view that requiring a purchaser of a cement plant to negotiate with multiple parties would be impractical and would increase significantly the complexity of any divestiture process, also raising the risk that a timely divestiture is not achieved. In addition, we noted that Lafarge Tarmac would be better able to realize improved value for its RMX plants if it sold them as part of a cement plant divestiture package, as opposed to a stand-alone sale (eg by Cemex or Hanson). In the latter case, the ability to negotiate the sale price would be limited to the value of the RMX plants alone, and the seller would only have a very limited opportunity to generate competitive tension to acquire the RMX plants, given that the identity of the purchaser would be effectively predetermined by the outcome of any cement plant divestiture process. Therefore, we concluded that RMX plants from Lafarge Tarmac represented the most practical and suitable operations to include within a cement plant divestiture package.
- 13.100 We received a number of submissions about whether the number of RMX plants to be divested should be adjusted in light of the characteristics and preferences of the purchaser:
- (a) In its response to the provisional decision on remedies, Cemex told us that it agreed that a purchaser of a cement plant should be able to opt out from acquiring any RMX plants.⁵³ It also told us that it was not necessary for a cement producer to be vertically integrated, and that there was 'significant evidence both within GB and in other jurisdictions that standalone cement plants, or cement

⁵³ *ibid*, paragraph 4.27.

plants with no or very low levels of vertical integration with RMX plants, are viable and effective competitors'.⁵⁴

- (b) In its response to the provisional decision on remedies, Aggregate Industries told us that it agreed that a purchaser of a cement plant should be able to opt out from acquiring any RMX plants as part of the divestiture package as it did not consider it necessary to include RMX plants in order to increase competition in the GB cement markets and/or to ensure that the divestiture package would be sufficiently attractive to guarantee that a purchaser could be found.⁵⁵
- (c) The ISBA told us that the inclusion of downstream RMX operations within the divestiture package was necessary in order to attract a purchaser.⁵⁶
- (d) In its response to the provisional decision on remedies, BDS told us that Lafarge Tarmac would be 'keen' to hold on to its RMX volumes, having already divested '175' RMX plants as part of the Anglo–Lafarge JV remedies process. It considered that whilst the inclusion of RMX plants in the divestiture package to enable up to 15 per cent of cement production to be consumed downstream would 'guarantee a degree of sales for the new owner', [redacted].^{57,58}

13.101 We noted that Cemex and Aggregate Industries supported the approach set out in the provisional decision on remedies, although Aggregate Industries' reasoning for this view was somewhat different from our own. In response to BDS's argument above, we would not be concerned if Lafarge Tarmac sold its cement plant to an existing RMX operator provided that the purchaser was a suitable purchaser (see paragraphs 13.104 to 13.115). In such circumstances, we would not consider it proportionate to require more RMX plants to be divested than were required to ensure an effective remedy in relation to the AEC we found in the GB cement markets. Whilst it is possible that Lafarge Tarmac might have the incentive only to consider purchasers that already own sufficient downstream RMX or concrete product operations to not warrant any RMX plant divestitures by Lafarge Tarmac, the strength of this incentive would need to be balanced and weighed against Lafarge Tarmac's other incentives, eg to maximize its sale proceeds or to consider the impact on its wider business. For these reasons, we remained of the view that the extent to which RMX plants should be divested should vary according to the wishes of potential purchasers and the extent of their existing RMX operations.

13.102 Based on our assessment above, we concluded that a purchaser of a divested cement plant should have an option to purchase a number of RMX plants from Lafarge Tarmac, subject to an upper limit whereby the RMX plants' total annual cementitious requirement (including any pre-existing requirement arising from the purchaser's own RMX operations) would not account for more than 15 per cent of the divested cement plant's annual cement production capacity.⁵⁹ Our estimate of the potential impact of such a divestiture of RMX plants on Lafarge Tarmac's RMX oper-

⁵⁴ *ibid*, paragraph 4.20.

⁵⁵ [Aggregate Industries response to the provisional decision on remedies](#), p2.

⁵⁶ [ISBA response to the provisional decision on remedies](#).

⁵⁷ BDS told us that [redacted] (source: [BDS response to the provisional decision on remedies](#)).

⁵⁸ [BDS response to the provisional decision on remedies](#).

⁵⁹ Our definition of internal cementitious requirement: (a) includes all cement variants and cementitious materials in order to simplify the calculation and prevent manipulation of this calculation; eg if CEM I was the only relevant input, then this ratio calculation could be lowered by increasing GGBS substitution; and (b) makes no distinction between whether it is economical or not for a downstream RMX plant to source cement internally. Again, this simplifies the ratio calculation. In deciding on the relevant RMX output to be used in calculating which RMX plant divestitures would be sufficient to meet a given VI ratio (see Appendix 13.2, Annex E, paragraph 2(a)), we would have regard to the volume of RMX sold from the plants in question during the 12 months preceding divestiture, as that would reflect both the approximate size of the RMX plant in question and the level of local demand.

ations is set out in Appendix 13.2, Annex E, where we estimated that, based on an upper limit of 15 per cent in relation to internal cement sales, Lafarge Tarmac may be required to divest up to seven 'large-scale' RMX plants (each producing 75,000 cubic metres a year) or up to 20 'small-scale' RMX plants (each producing 25,000 cubic metres a year).

13.103 To put these figures into context, as at 30 June 2013, Lafarge Tarmac operated 84 active RMX plants, 11 mothballed plants and seven dormant or closed plants, which bring the total up to 102 plants (or 95 active and mothballed plants). A divestiture of RMX plants as part of this remedy would leave Lafarge Tarmac with a level of vertical integration similar to, or greater than, Lafarge's historic level of vertical integration and that of the divested business and this would, in our view, be sufficient to enable it to compete effectively in both the cement and RMX markets.⁶⁰

- *Purchaser suitability*

13.104 In order to address purchaser risks,⁶¹ we considered both the likely availability of suitable purchasers, and the purchaser suitability criteria that we should apply to potential bidders. We discuss each of these in turn below. We first set out the views of the parties in relation to each, before setting out our own assessment and conclusions.

- ○ *Availability of suitable purchasers*

13.105 While we have not conducted a full market-testing process in relation to particular cement plants, we have explored with parties, in general terms, who might be interested in acquiring a cement plant divestiture package:

(a) MI told us that whilst it was not currently considering buying other cement assets in GB or in the sector elsewhere in Europe, it might do so if the opportunity arose.⁶² It added that it would be very disappointed if it was excluded from any opportunities presented by a divestiture remedy.⁶³ From its perspective, whether it acquired any assets that were to be divested would depend on the overall package.⁶⁴ In relation to other suitable purchasers, it told us that it would be easier for a pan-European operator with an existing supply chain capability to enter the GB market rather than a new entrant, and considered [REDACTED].⁶⁵

(b) Hanson told us that there were a range of possible buyers that could conceivably be interested in acquiring a cement plant, eg CRH, Aggregate Industries (Holcim Ltd), a steel company or a private equity investor. However, it questioned whether they would still remain interested after carrying out due diligence and considering the level of interest from competition regulators in this market.⁶⁶

⁶⁰ We noted that this was equivalent to the same ratio for Lafarge Tarmac at the time of its formation in January 2013. We further noted that should Lafarge Tarmac complete its proposed acquisition of TBP (see paragraph 8.366), Lafarge Tarmac's internal cement sales are likely to increase by around [REDACTED] kt (based on FY11 cement purchases by TBP), thereby increasing the extent of its vertical integration. The proposed acquisition of TBP will also result in Lafarge Tarmac becoming a producer of concrete products, which it currently does not produce.

⁶¹ Purchaser risks are risks that a suitable purchaser is not available or that the divesting party (or parties) will dispose to a weak or otherwise inappropriate purchaser (the Guidelines, [Annex B, paragraph 6](#)).

⁶² [MI and HCM response hearing summary](#), paragraph 1.

⁶³ *ibid*, paragraph 15.

⁶⁴ *ibid*, paragraph 26.

⁶⁵ *ibid*, paragraph 20.

⁶⁶ [Hanson response hearing summary](#), paragraph 24.

- (c) Aggregate Industries told us that cement importers might be less able to operate an acquired cement plant given the level of technical competence required. However, it added that such expertise might be present within the parent companies of some of the importers.⁶⁷ It also told us that the investment that would be required to acquire a cement plant would be significant, and that for a potential buyer, the opportunity would have to be benchmarked against alternative investment opportunities elsewhere in the world. It considered that the GB market on the whole was currently less attractive than others.⁶⁸ However, it told us that [✂]. It added that there were advantages and disadvantages of owning a single cement plant rather than two or more, and that this largely depended on the buyer's strategic aspirations.⁶⁹
- (d) Breedon Aggregates had previously sought to acquire some of the assets divested as part of the Anglo-Lafarge JV remedies process, but withdrew from the process at an early stage.⁷⁰ It told us that it would still be interested in acquiring a cement plant, particularly if it did not have 'future risks' attached to it, eg access to mineral reserves and emissions issues.⁷¹
- (e) Brett Group told us that whilst it did not have the financial resources on its own to acquire a divested cement plant, it might consider doing so as part of a JV with another partner. However, it added that it would need to ensure that it had the right expertise to manage a cement plant, and that the plant's location would need to align with its other construction materials interests.⁷²
- (f) CRH told us that if there were to be further cement plant divestitures, then it would be interested in looking at them, but it would need to evaluate whether or not the plant(s) would be able to provide the returns that its board and shareholders would expect.⁷³

13.106 Lafarge Tarmac told us that it did not believe that there would be any suitable buyers for a cement plant divestiture, and that this would affect its market value.⁷⁴ It added that the market had changed following the introduction of HCM and the significant growth of importers, and therefore any potential investor would be more likely to invest in a developing market than in GB. It also told us that there were few cement buyers who were entirely new entrants to the market and who did not have activities in another country.⁷⁵ In its response to the provisional decision on remedies, Lafarge Tarmac told us that since 'all of the other major operators in the market' (Hanson, Cemex and HCM) were prohibited from purchasing the divested cement plant, a purchaser would not be able to rely on 'local economies of scale' and would 'almost certainly be without any experience in the manufacture of cement in GB'. It argued that this would contribute to Lafarge Tarmac not achieving a 'fair market value' for its cement plant.⁷⁶ We consider in more detail Lafarge Tarmac's arguments in relation to achieving 'fair value' on the divestiture of its cement plant in Appendix 13.9, though we noted that such considerations had not prevented HCM, nor Tarmac before it, from operating a cement operation with a single cement plant.

⁶⁷ [Aggregate Industries response hearing summary](#), paragraph 11.

⁶⁸ *ibid*, paragraph 12.

⁶⁹ *ibid*, paragraph 14.

⁷⁰ [Breedon Aggregates response hearing summary](#), paragraph 2.

⁷¹ *ibid*, paragraph 11.

⁷² [Brett Group response hearing summary](#), paragraph 8.

⁷³ [CRH response hearing summary](#), paragraph 11.

⁷⁴ [Lafarge Tarmac response hearing summary](#), paragraph 11.

⁷⁵ *ibid*, paragraph 23.

⁷⁶ [Lafarge Tarmac response to the provisional decision on remedies](#), paragraph 83.

13.107 The following parties ruled themselves out as potential buyers: [REDACTED].⁷⁷

13.108 These views from parties suggested that there was a relatively limited universe of potential purchasers with sufficient financial resources and expertise. Whilst we have earlier ruled out existing GB cement producers including MI (HCM) as potential purchasers of the divested cement plant, we noted that at this stage, and prior to any form of market testing by Lafarge Tarmac, the number and range of potential purchasers that were mentioned by parties was nonetheless significant, including Aggregate Industries, Breedon Aggregates, Brett Group (as part of a consortium), CRH and possibly other types of bidders such as steel producers and private equity firms.

13.109 We cannot rule out the possibility that interested and credible buyers may come from outside the UK or from outside the heavy building materials sector.⁷⁸ For example, we noted that MI had been looking to enter the GB construction sector for some time, and achieved this when the right opportunity arose through its acquisition of the Hope plant and other complementary assets.⁷⁹

13.110 In its response to the provisional decision on remedies, Lafarge Tarmac told us that it disagreed with the CC's provisional view that there was a 'significant' number and range of potential bidders for a divested cement plant, and that it would receive a 'fair price'. It argued [REDACTED].⁸⁰ We noted these comments, but judged that there was little to suggest that potential purchasers would not be forthcoming, as and when Lafarge Tarmac sought to actively market a divestiture package.

13.111 We concluded that, were either the Cauldon or Tunstead plant to be actively marketed, Lafarge Tarmac would be able to attract a number of potential purchasers interested in the opportunity to enter, or expand their presence in, the GB cement markets.

o o *Purchaser suitability criteria*

13.112 Our guidance indicates that the CC would expect suitable buyers to:⁸¹

- (a) be independent of any divesting party or any related party;
- (b) have the appropriate expertise, commitment and financial resources to operate and develop the divestiture business as an effective competitor; and
- (c) not itself create further competition or regulatory concerns.

13.113 We asked parties what they considered would be appropriate purchaser suitability criteria:

- (a) Aggregate Industries told us that [REDACTED].⁸² It added that it would be concerned if a new market entrant, or a relatively small company with limited experience, [REDACTED], were to acquire any divested assets and face serious difficulties, eg if a buyer lacked the necessary infrastructure, supply agreements, customer relationships, technical support and other key business functions necessary to run a commer-

⁷⁷ [REDACTED]

⁷⁸ Following publication of the provisional decision on remedies, we also received further approaches from potentially interested bidders in the cement plant divestiture package from outside the UK heavy building materials sector.

⁷⁹ [MI and HCM response hearing summary](#), paragraph 1.

⁸⁰ Lafarge Tarmac response to the provisional decision on remedies, paragraph 84.

⁸¹ The Guidelines, [Annex B, paragraph 17](#).

⁸² [Aggregate Industries response hearing summary](#), paragraph 7.

cially viable operation.⁸³ It added that the CC would have to be satisfied that a buyer of a divested cement plant(s) had the operational expertise to run the plant(s) effectively.⁸⁴ However, Aggregate Industries told us that [REDACTED].⁸⁵

- (b) Cemex told us that a suitable purchaser was one that knew the market in GB and also knew how to run a cement plant. In this regard, it believed that [REDACTED] would qualify as suitable purchasers.⁸⁶
- (c) Brett Group told us that it hoped that any divested cement plants would be acquired by a 'credible' buyer, as cement plants were large operations and customers needed them to be operated reliably. Therefore, it considered that any company operating a cement plant would need to demonstrate a good track record, [REDACTED].⁸⁷ It also told us that if it acquired a cement plant (either on its own or possibly with another partner), it would seek to ensure that it had the appropriate expertise in managing a cement plant operation.⁸⁸
- (d) MI told us that the buyer's 'profile' was very important, particularly if it could internalize, say, 50 per cent of its production.⁸⁹
- (e) In its response to the provisional decision on remedies, BDS also told us that [REDACTED]. BDS considered that whilst this remedy's aim was to 'encourage new companies to enter the industry', for the reasons given above, it would result in a 'readjustment of market shares amongst the existing companies'. BDS added that [REDACTED].⁹⁰

13.114 We also received two submissions about the potential suitability of Aggregate Industries. Our consideration of these submissions is set out in Appendix 13.2, Annex G, where we state that we have not yet conducted any review of Aggregate Industries as a suitable purchaser, and will consider this should it put itself forward as a potential purchaser during the divestiture process. As noted in that annex, Aggregate Industries' downstream businesses consumed around [REDACTED] Mt of cement, and we are therefore mindful that an acquisition by Aggregate Industries of a cement plant with 1 Mt production capacity could potentially service up to [REDACTED] per cent of its internal cement consumption requirement (even after taking into account the impact of a clearance of the potential transaction with Breedon Aggregates on Aggregate Industries' RMX operations).⁹¹ However, we note that this could vary depending on the proportion of cementitious materials consumed internally, and the economic and commercial rationale to procure cement from third parties where appropriate to do so.

13.115 Having considered the above submissions, we decided that a suitable purchaser would need to display the following characteristics:

⁸³ [Aggregate Industries response to Remedies Notice](#), paragraph 2.2(d).

⁸⁴ [Aggregate Industries response hearing summary](#), paragraph 16.

⁸⁵ *ibid*, paragraph 15.

⁸⁶ [Cemex response hearing summary](#), paragraph 25.

⁸⁷ [Brett Group response hearing summary](#), paragraph 10.

⁸⁸ *ibid*, paragraph 8.

⁸⁹ [MI and HCM response hearing summary](#), paragraph 25.

⁹⁰ [BDS response to the provisional decision on remedies](#).

⁹¹ In FY11, Aggregate Industries' RMX operations sold around [REDACTED] million cubic metres of RMX. Should its transaction with Breedon Aggregates be approved by the CC in a separate merger inquiry, it would have sold to Breedon Aggregates RMX plants (in northern Scotland) that accounted for around [REDACTED] (FY12) to [REDACTED] (FY12) cubic metres (source: BDS 2012 data).

- (a) *Independence.* In order to maintain the independence of the new entrant, a suitable purchaser would not have any structural or financial links (whether directly or indirectly) with any GB cement producer.⁹²
- (b) *Expertise, commitment and financial resources.* We considered that given the sizeable investment represented by a cement plant divestiture package, we would expect that this would limit the universe of purchasers to those with the ability to finance the acquisition either through internal or external sources. We would expect a potential purchaser to be able to demonstrate a track record in manufacturing, ideally in the heavy building materials sector. Where in-house expertise is not currently available, we would expect a potential purchaser to set out how it intends to procure the relevant expertise. We would also expect a purchaser to provide us with information on its strategy for developing the divestiture package following its acquisition, including its plans regarding the geographic reach of its cement operations.
- (c) *Does not itself create further competition or regulatory concerns.* We would consider this on a case-by-case basis based on the individual circumstances of the potential purchaser.⁹³
- (i) At this stage, we have not attempted to assess the nature or scale of the potential competition or regulatory concerns that specific purchasers might raise. In relation to the question of whether Aggregate Industries might be considered a suitable purchaser, we would not, at this stage, rule it out as a potential purchaser given that it is not currently a GB cement producer and did not form part of any coordinating group in GB, and we have not yet assessed the competitive impact of an acquisition by it (see also Appendix 13.2, Annex G).
- (ii) In assessing the suitability of a potential purchaser under this heading, and in the light of our coordination AEC, we will look closely at any evidence of past cartel activity or any other infringement of Article 101(1) of the TFEU or equivalent prohibitions in any jurisdiction (including any conduct admitted during leniency or other settlement proceedings) involving potential purchasers or their senior management. The CC will look particularly closely at participation in any infringements in cement, RMX and/or related markets and will have regard to the frequency and seriousness of any infringement, where and when any such infringement occurred and may also take account of any steps taken following any infringement to improve compliance with competition law.

Remedy implementation considerations

13.116 An effective divestiture process should ensure that divestiture of an appropriate divestiture business to a suitable purchaser takes place within a reasonable time period. It should also ensure that the divestiture business does not degrade prior to

⁹² In its [response to the provisional decision on remedies](#) (paragraph 4.28), Cemex told us that if we required a suitable purchaser of a cement plant not to have any financial or structural links with Lafarge Tarmac, Hanson or Cemex (as specified in the provisional decision on remedies), then 'in the interests of equal treatment, the purchaser should not be permitted to have any links with HCM'. While we note that HCM is not part of any coordinating group, we agreed with Cemex that it would be appropriate for this criterion to apply to links with all GB cement producers, given the emphasis on creating a new GB cement producer in the design of this remedy. We did not consider it necessary to extend this restriction to non-GB cement producers as any such links would not compromise the effectiveness of the remedy.

⁹³ We did not agree with the submission by BDS [redacted] a number of potentially suitable purchasers without having conducted any competitive assessment as to their purchaser suitability, [redacted], since they each import cement and have downstream operations, as well as potentially excluding [redacted], which imports GGBS and has the potential to import cement,

divestiture (ie the process should guard against asset risks⁹⁴). An important factor that is likely to drive asset risks is the timescale between deciding on the divestiture and its implementation.

13.117 When considering how to implement this remedy measure, we focused on identifying potential asset risks and how these should be addressed through the design of the divestiture process, in terms of:

- (a) achieving a timely divestiture; and
- (b) protecting the divestiture package.

- *Achieving a timely divestiture—views of parties*

13.118 We asked parties what timescale should be allowed for the implementation of any divestiture; and under what circumstances a divestiture trustee should be appointed.

13.119 MI considered that any divestitures should be conducted in a timely fashion. It told us that [redacted].^{95,96}

13.120 The OFT told us that it wanted to see a package of remedies that would have an early prospect of eliminating most, or all, of the customer detriment we identified.

13.121 Cemex and Lafarge Tarmac mentioned that the process could be delayed by the need for the divesting party to achieve a ‘fair market value’:

- (a) Cemex considered that the negotiation process for divestment would take between 12 and 18 months, and this timescale was necessary in order to achieve a fair value for such an asset.⁹⁷
- (b) Lafarge Tarmac told us that any divestiture could not take effect before 2016 in order to achieve a fair market price. It added that the divestiture of the Hope plant had been able to proceed on an accelerated timetable because of the scale of efficiencies that were to be achieved through the merger. It also told us that there would be difficulties in selling in the current market to a restricted buyer community and complications in separating various other assets from a cement plant.⁹⁸

- *Protecting the divestiture package—views of parties*

13.122 MI told us that consideration should be given to the use of a monitoring trustee with a remit to conduct follow-up work about how well the divestiture was implemented.⁹⁹ It also told us that whilst it was competing vigorously, it was not easy being a new entrant. It noted that a number of challenges had arisen from the fact that it had not acquired an existing business entity with a track record. These challenges had related to credit insurance, dealings with banks and large suppliers, issues with integrating management and costs, as well as [redacted].¹⁰⁰

⁹⁴ Asset risks are risks that the competitive capability of a divestiture package will deteriorate before completion of divestiture, eg through loss of customers or key staff (see the Guidelines, [Annex B, paragraph 6](#)).

⁹⁵ [MI and HCM response hearing summary](#), paragraph 52.

⁹⁶ *ibid*, paragraph 22.

⁹⁷ [Cemex response hearing summary](#), paragraph 25.

⁹⁸ [Lafarge Tarmac response hearing summary](#), paragraph 24.

⁹⁹ [MI and HCM response hearing summary](#), paragraph 53.

¹⁰⁰ *ibid*, paragraph 2.

13.123 The OFT told us that a cement plant divestiture would be more effective if the businesses to be divested could operate almost immediately after sale as stand-alone businesses with their own set of customers and orders to fulfil.

- *Our conclusions on implementation*

13.124 Whilst Lafarge Tarmac may have some incentives to preserve the divestiture package in order to achieve a higher sale price, it also has incentives not to win and maintain higher-value and longer-term customers if it expects these customer relationships to be transferred to the acquirer of the divested plant, and not to invest in the facilities to be divested (other than possibly the minimum spend necessary), given that the creation of a stronger new entrant could potentially have a sustained negative effect on Lafarge Tarmac's ongoing and future profitability in the GB cement markets. The consequences of Lafarge Tarmac pursuing the latter strategy could significantly undermine ability of the purchaser of the divestiture package to act as an effective competitive constraint as soon as it commences trading under new ownership.

13.125 Another potential source of asset risk concerns the transfer of 'high-quality' contracts and customers from the plant that is to be divested to the retained plants.¹⁰¹ Moreover, once a cement plant is identified for divestiture, we considered that this might give rise to some uncertainty among customers of the security of supply from that cement plant, and the potential for some disruption following a new entrant taking over its operation. This could affect the willingness of customers to accept deliveries from that cement plant, resulting in a deterioration of the asset. The quicker the divestiture process is completed, the lower this risk and shorter the period of uncertainty.

13.126 We therefore concluded that there was significant asset risk associated with this divestiture, which would increase the longer the divestiture process continues.

13.127 To protect against asset risk, and in line with our normal practice, we will seek interim undertakings from Lafarge Tarmac which impose a general duty to maintain the divestiture package (including the cement plant selected for divestiture and any RMX operations that may form part of the divestiture package) in good order and not to undermine the competitive position of the package. Such undertakings would contain a commitment from Lafarge Tarmac to maintain the relevant cement plant in good working order, and to conduct routine maintenance as normal. The CC would make an interim Order to this effect if suitable interim undertakings were not forthcoming from Lafarge Tarmac within a reasonable period of time.

13.128 To support these interim undertakings (or interim Order), we will require a monitoring trustee to be appointed as soon as is reasonably practicable, to oversee the protection of the divestiture package (including the cement plant selected for divestiture and any of Lafarge Tarmac's RMX operations that may form part of the divestiture package) until completion of the divestiture and to ensure that Lafarge Tarmac is taking the steps necessary to achieve an effective and timely disposal.

13.129 The monitoring trustee would be required to report to the CC at least once a month on the current trading performance of the divestiture package benchmarked against the performance of Lafarge Tarmac's other three cement plants. The first of these reports should include details of any changes to the asset register at either the Cauldon or Tunstead plant (whichever is being divested) since 1 September 2013, with an update on any changes to the relevant asset register as required by the CC.

¹⁰¹ This concern was raised in the submission by [X].

- 13.130 The asset risks we have identified are likely to increase the longer the divestiture period that is given to achieve a disposal. We considered that Lafarge Tarmac's lack of incentive to complete any cement plant divestiture represented a significant risk to the effective and timely completion of a divestiture—for example, based on paragraph 13.121(b) above, it appears clear that the incentives that existed in relation to the Anglo–Lafarge JV do not exist now for Lafarge Tarmac. We therefore decided that we would need to include sufficient safeguards in any divestiture process to ensure that Lafarge Tarmac had strong incentives to achieve a prompt and effective divestiture.
- 13.131 A critical aspect of managing asset risks is in setting an appropriate period for the divestiture to take place. This would need to be long enough to enable Lafarge Tarmac to canvass a suitable selection of potential suitable purchasers to facilitate effective disposal and due diligence. It should also be sufficient for Lafarge Tarmac to realize an approximation to fair market value for the divestiture package. However, it should be no longer than necessary to achieve these aims, given the risks to the effectiveness of the remedy, and the ongoing harm to customers, associated with delay.
- 13.132 We noted that following the publication of the Anglo–Lafarge merger inquiry's final report on 1 May 2012, a notice of acceptance of final undertakings was published on the CC website on 27 July 2012, with completion of the Hope divestiture package sale process on 7 January 2013, ie completion took place in just over eight months from the publication of the final report, or around five months from the date of the final undertakings. We note that the Hope divestiture package not only included the Hope plant, but also included some aggregates and asphalt sites together with a sizeable number of RMX plants, and that divestiture had been achieved in a matter of months. A key factor in the speed with which this process was achieved was the incentive of the two shareholders (Lafarge Group and Anglo American) to push through with the transaction. Lafarge Tarmac told us that there were large synergies to gain from doing the transaction quickly.
- 13.133 In its response to the provisional decision on remedies, Lafarge Tarmac disputed our assessment of the time taken for the Hope divestiture package to be divested. It told us that in order to implement the JV, Anglo American and Lafarge had each instructed banking advisers who had been working on the JV proposal for some months ahead of the announcement of their proposed JV in February 2011. It told us that these advisers had been informed that approval of the JV would be likely to require a cement plant divestiture, and that the Hope plant would be likely to be the 'divestment asset'. It told us that preparation of the marketing material for the Hope plant commenced in March 2011, and that during the course of the OFT's review, the 'Information Memorandum' had been distributed to potential purchasers in order to demonstrate to the OFT that the Hope plant was 'saleable and that there would be available buyers'.¹⁰² It added that by the time of the CC's final report on the merger inquiry, the banks had been working on the sale for around 18 months and that MI had been identified as the 'most interested potential purchaser'.¹⁰³
- 13.134 Lafarge Tarmac also told us that Anglo American and Lafarge were willing, in the context of their JV formation, to accept the sale of the Hope plant at a 'significant undervalue' because 'on balance, the scale of synergies anticipated through the JV was sufficient, over time, to outweigh the loss of value on the sale'. It added that there were no 'such synergies' in relation to a cement plant divestiture under this

¹⁰² Lafarge Tarmac response to the provisional decision on remedies, paragraph 86.

¹⁰³ *ibid*, paragraph 87.

remedy, and that the ‘implications of a sale at an undervalue’ were therefore ‘far more injurious to the retained business’.¹⁰⁴

13.135 Lafarge Tarmac considered it ‘impossible that a sale at fair market value could be achieved within the very restricted time scale proposed by the CC’, It added that in contrast to its sale of the Hope divestiture package to HCM, it had not instructed bankers on any sale; no sale memorandum had been prepared; no buyers had been identified; and no due diligence had been conducted. It also told us that having divested the Hope plant to ‘the one new entrant that was ultimately willing to make a final and binding offer’, it did not believe that there were any ‘ready buyers’ for another cement plant. It considered therefore that there was no basis for the CC to believe that a sale could be achieved within [redacted].¹⁰⁵

13.136 We considered Lafarge Tarmac’s comments about the relevance of the Hope divestiture to determining a suitable timescale. We noted that the initial divestiture marketing process that commenced in March 2011 was necessarily limited and that the exact scope of the required divestiture was not known until publication of the CC’s final report more than a year later. We considered that preparation of the relevant divestiture marketing materials can be undertaken within a relatively short period. We found it implausible in the extreme that, had Lafarge and Anglo American commenced their sale process from the date of publication of the CC’s final report in respect of the Anglo–Lafarge JV inquiry, it would have taken 18 months to sell the Hope divestiture package. We further note that in this investigation, Lafarge Tarmac would be afforded some time following the publication of this report, while the CC agrees undertakings or implements an Order before the commencement of its divestiture period. During this period, Lafarge Tarmac would be able to initiate its own divestiture process. We concluded that the experience of the Hope divestiture provides a useful benchmark for the amount of time that would be needed to achieve an effective disposal in the current cases.

13.137 Weighing up the various relevant considerations, we decided that a divestiture period should not exceed [redacted] months from the date of signing the final undertakings, or the issuance of an Order (whichever may be applicable). To ensure that this timescale is met, Lafarge Tarmac should periodically provide the CC and any monitoring trustee with an update on the progress of the divestiture process against a timetable to be agreed with the CC. The CC reserves the right to appoint a divestiture trustee should divestiture not be implemented within the specified divestiture period; or if the CC reasonably expects that an effective disposal would not be achieved within this divestiture period.

13.138 Given that the operations that would form part of the divestiture package currently operate as part of a wider network of Lafarge Tarmac’s cement plants, and operate as part of a ‘national’ business, we do not propose the immediate introduction of hold-separate arrangements for the divestiture package during the divestiture period. Instead, the divestiture package should continue to share existing central and other support functions provided by Lafarge Tarmac, while the process of separating the divestiture package from Lafarge Tarmac’s remaining business is under way.

¹⁰⁴ *ibid*, paragraph 88.

¹⁰⁵ *ibid*, paragraph 89.

Cement market data remedy

Summary of remedy

13.139 Figure 13.2 summarizes our remedy measure in relation to the disclosure of GB cement market data. In the context of our assessment of this remedy, unless stated otherwise, references to GB cement market data mean the data published by the MPA and BIS concerning the GB cement markets.

FIGURE 13.2

Summary of remedy measure: cement market data remedy

We have decided that:

- This remedy covers all cement sales and production data currently provided by the GB cement producers to the MPA through a permitted third party.
- For each set of monthly, quarterly and annual GB cement market data that is currently published by the MPA and BIS, there should be a time lag of no less than three months before the data can be made public.
- As a condition for continuing to collate and publish the relevant GB cement market data, the MPA should give undertakings that it will not receive or publish any GB cement market data collected on its behalf by Bessler Hendrie, or any other permitted third party, before the expiry of the three-month time lag. Any proposed change in such arrangements must receive specific approval from the CC (or the Competition and Markets Authority (CMA) from 1 April 2014). The MPA will further undertake that a permitted third party engaged on its behalf to collect the relevant GB cement market data will be fully independent of the GB cement producers and have the necessary safeguards in place to ensure that the relevant data is not released to the MPA or any other person before the three-month time lag has passed.
- In the absence of satisfactory undertakings from the MPA, the CC will make a recommendation to BIS to collate the relevant GB cement market data and publish the relevant data according to the three-month time lag set out under this remedy.
- An Order should be issued that prevents any GB cement producer from providing its sales and production data that has yet to pass its three-month time lag to a third party private sector organization. The only exceptions to this prohibition are when one of the following two conditions is satisfied: either (a) the data is being collated by a permitted third party on behalf of the MPA under the terms of the undertakings set out above; or (b) the third party does not also receive data from any other GB cement producer and the output is only used for internal consumption by the GB cement producer that had engaged the third party. In relation to the latter condition, a third party will, however, be permitted to act on behalf of other GB cement producers so long as: (a) it acts on behalf of the other GB cement producer on a separate engagement; and (b) the third party has put in place suitable confidentiality firewalls to prevent any sharing or access to any information between GB cement producers on separate engagements. Under the Order, the GB cement producers will ultimately be responsible for ensuring that the third party concerned has complied with these conditions.

How this remedy addresses the AEC and/or resulting customer detriment

13.140 The parties' general views in relation to how this remedy addresses the coordination AEC and/or resulting customer detriment which were submitted prior to the publication of our provisional decision on remedies can be found in Appendices 13.1 and 13.3. We set out below the parties' responses to our published provisional decision on remedies, followed by our own assessment and conclusions.

- *Parties' responses to the provisional decision on remedies concerning the effectiveness of the remedy*

13.141 We set out below parties' views on the effectiveness of this remedy as set out in their responses to the provisional decision on remedies.

13.142 In its response to the provisional decision on remedies, the MPA told us that it welcomed the opportunity to be able to retain its responsibility for collating the market data, and agreed to provide 'reasonable' undertakings to the CC. It accepted the terms of the proposed remedy as set out in Figure 3.2 of the provisional decision on remedies.¹⁰⁶

13.143 Cemex argued that behavioural remedies were sufficient without the requirement for any structural remedies, and told us that a 'prohibition on the publication of MPA data before an appropriate time lag would remedy the alleged AEC', since it would make it 'impossible for the CC's model of coordination to be implemented' in the GB cement markets. It added that this remedy was 'further strengthened by the prohibition on generic price announcement letters'.¹⁰⁷

13.144 Aggregate Industries told us that it did not have a 'clear, practical understanding of the current market data disclosure arrangements', as it was not a GB cement producer but instead imported cement and was a customer for cement, principally for its own internal consumption by its downstream businesses. It therefore told us that it could not comment on how this 'remedy would affect behaviour in the market'.¹⁰⁸

13.145 MI told us that it had joined the MPA to benefit from its 'lobbying activities', but that it had joined on a 'temporary basis' for an initial six months pending the outcome of the current CC investigation.¹⁰⁹

13.146 Lafarge Tarmac told us that in July 2013, it had informed the MPA that with effect from September 2013, its cement data would only be submitted to the MPA on an annual basis, and that this annual data would only be published three months after the year end.¹¹⁰

13.147 In relation to Lafarge Tarmac's decision not to submit monthly data to the MPA, we note that this was a voluntary decision taken by Lafarge Tarmac. Therefore, Lafarge Tarmac's decision does not serve as a prohibition that prevents Lafarge Tarmac from deciding to submit monthly data at a future point in time. Therefore, we did not consider that this decision undermined the need for a remedy measure that restricted the publication of monthly GB cement market data.

¹⁰⁶ [MPA response to the provisional decision on remedies](#).

¹⁰⁷ [Cemex response to the provisional decision on remedies](#), paragraphs 3.2 & 3.4.

¹⁰⁸ [Aggregate Industries response to the provisional decision on remedies](#), p2.

¹⁰⁹ [MI response to the provisional decision on remedies](#), paragraph 3.4.

¹¹⁰ [Lafarge Tarmac response to the provisional decision on remedies](#), paragraph 59(d)(ii).

- *Our assessment of how the remedy addresses the AEC/customer detriment*

13.148 In paragraph 8.289(c), we found that the publication of cement market data contributed to the coordination AEC in the GB cement markets.

13.149 There are currently two primary sources where monthly, quarterly and annual data containing GB cement sales and production volumes are published:¹¹¹

- (a) in a document titled 'Monthly Statistics of Building Materials and Components' which is published each month by BIS on its website; and
- (b) on the website of the trade association, the MPA, where monthly data is published on cement sales volumes by region and sales channel (eg to RMX producers or builders' merchants) and quarterly data is published on GB sales volumes for cement and cementitious materials.

13.150 We considered that a delay or disruption to the publication of this data would make it more difficult for the Top 3 cement producers to use the data to determine their own monthly shares of sales of GB cement production, which is part of the mechanism by which each monitors its relative position in the market.

13.151 This remedy would thereby seek to address one of the features identified in paragraph 8.215 that contributes to the coordination AEC finding, namely: market transparency, in particular in relation to market shares, and the strategic focus of the Top 3 cement producers on maintaining market share stability between them. We considered that applying a time lag would introduce uncertainty for any GB cement producer in relation to calculating its own position in the market (and hence its relative position in the market compared with its rivals), and would therefore reduce the level of transparency that currently exists in this regard. We consider below the issues relating to the design of this remedy.

Remedy design considerations

13.152 In determining the design of this remedy, we considered the following issues:

- (a) the GB cement market data covered by this remedy;
- (b) the appropriate time lag for publication of cement market data;
- (c) whether the MPA should continue to have overall responsibility for collecting the cement market data through Bessler Hendrie (or another independent third party); and
- (d) whether there should be an absolute prohibition on GB cement producers from submitting their data to other third party private sector organizations.

- *GB cement market data covered by this remedy*

13.153 We considered that any cement production and sales data provided by the GB cement producers to the MPA (whether directly, or as at present through Bessler Hendrie) should be covered by this remedy.

¹¹¹ Remedies Notice, paragraph 79.

13.154 We have decided not to include within the scope of this remedy the data provided by the GB cement producers to the ONS in relation to the PRODCOM survey (see Appendix 13.3 for further details) for the following reasons: (a) the provision of data by the GB cement producers to the ONS for the purposes of PRODCOM is required under EU law; and (b) the PRODCOM data is annual and only preliminary figures are published six months after the year end, which already exceeds the three-month time lag we have proposed under this remedy. In addition, there appears to be some ‘noise’ within the PRODCOM data for UK cement since data on Northern Ireland was included (albeit we note that there are only two cement producers in Northern Ireland of which one is Lafarge Tarmac), such that the usefulness of this data to GB cement producers for monitoring their relative positions is limited.

- *Appropriate time lag for publication of GB cement market data*

13.155 In relation to determining the appropriate time lag for the publication of cement market data, we sought to balance the needs of the wider user base for the data with the aims of our remedy. Currently, monthly data is published by the MPA and BIS one month in arrears and quarterly data is published three months in arrears. We considered that publishing monthly data one month in arrears provided the most timely and strategically valuable information in relation to determining a GB cement producer’s relative share of sales of GB production.

13.156 We considered that delaying the publication of this monthly data by three months would to a large extent impair the strategic value of this data to the Top 3 cement producers such that the publication of this data would provide a less useful means by which the GB cement producers could detect deviations from the coordinated outcome, whilst retaining much of its value to the wider users of this data, eg BIS. The MPA in its response to the Remedies Notice had told us that it was prepared to move to a three-month time lag for the publication of the monthly cement market data, and did not highlight any practical difficulties in this regard.¹¹² As mentioned earlier, subsequently in its response to the provisional decision on remedies, the MPA had agreed to accept the time lag of three months for the publication of the relevant GB cement market data covered under this remedy.

13.157 We concluded that a time lag of three months for the publication of monthly, quarterly and annual cement market data would be sufficient to weaken any coordinating group’s ability to rely on this data whilst providing the benefits conferred by the availability of this data to the wider economy and users.

- *GB cement producers’ provision of data to the MPA*

13.158 We considered whether the MPA should be involved in the collation of data and the role of third parties, in particular Bessler Hendrie, before considering whether the GB cement producers should be prohibited from providing any of their data to third party organizations.

13.159 The MPA told us that it had strict safeguards in place with Bessler Hendrie to prevent any leakage of individualized information to the MPA, its members and any other entities, with Bessler Hendrie never releasing an individual firm’s information and only providing aggregated data (where there were at least three suppliers of data and no data where there were less than three suppliers). The MPA also told us that it had knowledge of this industry; relationships with the GB cement producers (including

¹¹² [MPA response hearing summary](#), paragraph 18.

agreements in place for the management of the provision of this data); and that it would prioritize the collection and publication of this data whilst BIS was less likely to do so.¹¹³

13.160 On whether we should change the way that the GB cement producers provided the MPA with data, we took considerable comfort from the involvement of a third party such as Bessler Hendrie that was itself:

- (a) independent of the GB cement producers in all respects, unlike the MPA which as a trade association would have ongoing working relationships and interactions with the GB cement producers; and
- (b) bound by its ethical guidelines and regulated as a firm of chartered accountants, in particular in relation to issues concerning confidentiality and disclosure of commercially sensitive information.

13.161 We have reviewed the agreement between Bessler Hendrie and the MPA and considered that there were sufficient safeguards in place that prevented the dissemination of individual firm information to the MPA, its members and other parties. We therefore propose that the MPA should be permitted to maintain overall responsibility for collating the data from the GB cement producers, subject to the following conditions:

- (a) The MPA must collate any data from each of the GB cement producers through a third party that is fully independent of the MPA and the GB cement producers. In particular, the third party should not have any working relationships with the GB cement producers other than through its engagement by the MPA to collate the relevant data.
- (b) The terms of any engagement of the third party must contain provisions that prohibit the disclosure of any individual firm's data, or any aggregated data containing data from fewer than three firms. The MPA should ultimately be responsible for ensuring that the third party implements and maintains these safeguards.
- (c) The third party engaged by the MPA to collate the data must not release any data (whether individual firm or aggregated data) to the MPA or any other party (including BIS) until such time as the time lag for disclosure, which we propose to be three months, has fully passed. For the avoidance of doubt, the release of individual firm data would be fully prohibited even after three months.

13.162 We found no reason to suspect that the MPA would seek to circumvent such a remedy proposal. However, in order to ensure that the MPA could not circumvent this remedy by changing its form and/or transferring its responsibilities to another entity, we propose that an obligation should be placed on the MPA to provide the OFT (or the CMA from 1 April 2014) with information on any change in circumstance being considered for the collation, aggregation and publication of the data in question, whereby the MPA must receive specific consent from the OFT (or the CMA from 1 April 2014) before it could change its practices from those in existence at the time of adoption of the remedial action.

13.163 In relation to the specification of this remedy concerning the release of individual firm data being prohibited even after the lapse of the three-month time lag, Cemex sought clarification in relation to whether individual firm data could be released. It considered

¹¹³ [MPA response to Remedies Notice](#).

that GB cement producers should be permitted to release individual firm data after a 12-month time lag, and told us that this was in line with the European Commission's decisional practice.¹¹⁴

13.164 Given our strong concerns about coordination in the GB cement markets, we could find no compelling reason or benefit in sanctioning the disclosure of firm-specific data after 12 months, or any other period. We therefore did not accept Cemex's suggestion in this regard.¹¹⁵

- *GB cement producers' provision of data to other private sector organizations*

13.165 We also considered whether there should be a full prohibition on the GB cement producers from providing any of their cement market data to other private sector organizations,¹¹⁶ other than that permitted under this remedy.

13.166 We considered that a remedy that narrowly targeted the MPA and its ability to collect and publish cement market data would leave significant scope for circumvention to take place given the much wider universe of possible private sector organizations that the GB cement producers could provide their data to without any restrictions. We considered that circumvention could take place either intentionally by the GB cement producers or inadvertently by a third party, eg a third party may wish to publish monthly cement production volumes (one month in arrears) for economic planning or environmental reasons, whereby the GB cement producers would face no restrictions on providing their individual data to this third party. The effect of such circumvention may be that it replicates the current situation which this measure is trying to address.

13.167 However, at the same time, we note that the GB cement producers may have legitimate reasons for wanting to provide their cement market data to third party organizations.

13.168 In its response to the provisional decision on remedies, Cemex sought clarity on the specification of this remedy in relation to the use of third parties by multiple GB cement producers. It told us that one 'third party consultant' might be used for a variety of different projects by different GB cement producers, which would require the GB cement producers to provide data to that 'third party consultant'. In these circumstances, Cemex told us that rather than requiring GB cement producers to ensure that the relevant third party had not received data from another GB cement producer, it would be more appropriate for the relevant Order to require third parties receiving such data to put in place 'appropriate confidentiality measures and ensure that the output for a particular project is only provided to the party instruction the consultant on that project'.¹¹⁷

¹¹⁴ [Cemex response to the provisional decision on remedies](#), Annex 2, paragraph 1.2.

¹¹⁵ In relation to Cemex's reference to the European Commission's 'decisional practice', we note that the context of the European Commission's remarks was a discussion of one of the parties' submissions that the information in question in the case related exclusively to past transactions (as opposed to future planned actions). The European Commission did not accept the parties' arguments that the information was purely historical and that its exchange would therefore not have an impact on competition in the market concerned, noting that in markets with stable or declining demand (such as the UK agricultural tractor market), firms could largely determine the future actions of their competitors on the basis of past transactions and behaviour. The European Commission's suggestion that one year could be considered as the point when historic information no longer had any real effect on future conduct was expressly confined to 'the present case' and at the 'United Kingdom, MAFF region and land use level'. We considered that the standards may well be different depending on the type of information being considered and the facts of each case.

¹¹⁶ Other private sector organizations include, but are not limited to, the CEMBUREAU (the European Cement Association) and market research or consulting firms.

¹¹⁷ [Cemex response to the provisional decision on remedies](#), Annex 2, paragraph 1.2.

- 13.169 We considered that this should be acceptable and noted that it was not uncommon within advisory service firms to handle potential conflicts/confidential matters in this way. However, as a condition for permitting GB cement producers to provide their individual data to other third parties, we would require each GB cement producer to ensure that the relevant third party had put in place sufficient measures to comply with this condition prior to disclosing any of its individual data.
- 13.170 We have therefore decided that whilst a GB cement producer should be prevented from providing its sales and production data that has yet to pass its three-month time lag to a third party organization, the only exceptions to this prohibition are when one of the following two conditions is satisfied, either:
- (a) the data is being collated by a permitted third party on behalf of the MPA ; or
 - (b) the third party does not also receive data from any other GB cement producer and the output is only used for internal consumption by the GB cement producer that had engaged the third party. A GB cement producer may engage a third party that has acted for another GB cement producer if: (i) the third party acts on behalf of the other GB cement producer on a separate engagement; and (ii) the GB cement producer engaging the third party ensures that the third party has put in place suitable confidentiality firewalls to prevent any sharing or access to any information between GB cement producers on separate engagements.

Remedy implementation considerations

- 13.171 In the first instance, we would seek to implement the measure in relation to the MPA's obligations under this remedy by seeking undertakings from the MPA. Only by way of the MPA giving satisfactory undertakings would we be prepared for the MPA to retain its overall responsibility for collating the GB cement market data. Based on its response in paragraph 13.142 above, our expectation at this stage is that the MPA will be prepared to give satisfactory undertakings.
- 13.172 Absent such undertakings from the MPA, we will consider the alternative of recommending to BIS that it should assume responsibility for collecting the relevant data. We note that BIS had indicated that it would seek to implement any recommendation made by the CC in this regard and had not highlighted any practical issues that may prevent it from doing so.¹¹⁸
- 13.173 Should the MPA give satisfactory undertakings to collate the GB cement market data, BIS would continue to receive the relevant GB cement market data from Bessler Hendrie or a permitted third party appointed by the MPA, subject to the same three-month time lag faced by the MPA. Our remedy measure once implemented would effectively return BIS to a situation it had operated prior to 2006 when it had collected the data with a three-month time lag.
- 13.174 When implementing this remedy, we will ensure that this remedy does not prevent the collection of cement market data by government agencies in accordance with their legal requirements to do so, eg the ONS in relation to its collection of data from the GB cement producers in relation to its PRODCOM survey, and for calculating its cement price indices for use in its producer price index.
- 13.175 In relation to the restrictions described above concerning the ability of GB cement producers to provide their individual data to other third party private sector organiz-

¹¹⁸ [BIS response to Remedies Notice](#), paragraph 12.

ations, we noted that there would be a number of practical risks in seeking to implement a prohibition on all GB cement producers by way of undertakings, eg the complexity and length of time that might be involved in reaching any consensus or agreement with all of the GB cement producers. Moreover, undertakings would only bind current GB cement producers. As such, we considered that an Order would be more effective and expeditious in implementing this part of the remedy.

Price announcement remedy

Summary of remedy

13.176 Figure 13.3 summarizes our remedy measure in relation to price announcement (or increase) letters.

FIGURE 13.3

Summary of remedy measure: price announcement remedy

We have decided that:

- The CC should make an Order that prohibits GB cement suppliers from sending generic price announcement letters to their customers.
- This prohibition should apply to price announcement letters used for all forms of cementitious materials, including GGBS and PFA.
- This prohibition would apply to all GB suppliers of cementitious materials and includes GB cement producers (and any new entrants and any new entrant that owns a cement plant divested as part of the implementation of our package of remedies), importers and suppliers of GGBS and PFA.
- Whilst we do not propose a mandatory template for customer-specific price announcement letters, a customer-specific price announcement letter should specify: (a) the name of the customer and the effective date of any price change; (b) the current (or last) unit price paid by the customer; (c) the new unit price being proposed; and (d) details of any other changes that affect the overall price paid.

How this remedy addresses the AEC and/or resulting customer detriment

13.177 The parties' general views in relation to how this remedy addresses the coordination AEC and/or resulting customer detriment which were submitted prior to the publication of our published provisional decision on remedies can be found in Appendix 13.4, Annex A. We consider first the parties' responses to the provisional decision on remedies, followed by our own assessment and conclusions.

- *Parties' responses to the provisional decision on remedies concerning the effectiveness of the remedy*

13.178 We set out below parties' general views on the effectiveness of this remedy as set out in their responses to the provisional decision on remedies.

13.179 Aggregate Industries told us that for the 'very limited volumes' of cement it sold to external customers, its policy was not to send price announcement letters. It added that [REDACTED]. It told us that having ceased issuing price announcement letters for all

cementitious materials, it did not have a ‘clear understanding of the present case for GB cement suppliers’, and that it could not comment in detail on how this remedy would affect their behaviour in the GB cement markets.¹¹⁹

13.180 Lafarge Tarmac told us that it had already changed the way in which it communicated changes to agreed prices with its bulk and packed cement customers, and that these took the form as set out in the provisional decision on remedies.¹²⁰

13.181 MI told us in its response to the provisional decision on remedies that, in ‘establishing itself in the relevant markets’, HCM had ‘taken account’ of the CC’s concerns in relation to coordination and that it had not adopted the other GB cement producers’ practices of issuing price increase letters.¹²¹

13.182 Cemex told us that it already had a policy of sending ‘customised price announcement letters’, and its response to the provisional decision on remedies concerning this remedy was focused on seeking clarification on the specification of this remedy.¹²²

- *Our assessment of how the remedy addresses the AEC/customer detriment*

13.183 In paragraph 8.208, we found that price announcement letters provided a means by which the Top 3 GB cement producers could exploit the structural susceptibility of the GB cement market to coordination, and that price announcement letters softened customer resistance to price increases.¹²³ We also found that the Top 3 cement producers appeared to be signalling that they would try to accommodate the others’ price increases in many cases.¹²⁴ We also noted in paragraph 7.201 that there may be legitimate reasons for notifying customers of planned or intended price increases, eg recovery of forecast cost increases and recovery of actual cost increases previously not recovered (or under-recovered).¹²⁵ However, we also noted that this did not preclude price announcement letters from serving other, anti-competitive purposes at the same time.

13.184 We considered that a prohibition on generalized or generic price announcement letters would remove one means by which the GB cement producers were able to signal price increases to each other.

13.185 In our view, such a prohibition would bring about a change in the manner and possibly timing by which the GB cement producers communicated with their customers. For those customers that have annual contracts with the GB cement producers, the timing of their price announcement letters would potentially occur at different times of the year from other customers. This would replace the practice of generic letters being sent to all customers at predefined times in the year.

13.186 By being permitted only to produce customer-specific price announcement letters, it will be more difficult for the GB cement producers to appreciate the level of price increase their competitors are seeking to apply. Whilst some leakage of information is always possible (eg customers may provide their letters to another GB cement producer), having knowledge of one customer’s specific price increase would not be sufficient to deduce accurately the gross price increase being sought that year by

¹¹⁹ [Aggregate Industries response to the provisional decision on remedies](#), p2.

¹²⁰ [Lafarge Tarmac response to the provisional decision on remedies](#), paragraph 59(d)(i).

¹²¹ [MI response to the provisional decision on remedies](#), paragraph 3.4.

¹²² [Cemex response to the provisional decision on remedies](#), Annex 2, paragraph 2.2.

¹²³ Paragraphs 7.190 & 7.200 and Appendices 8.2, 8.3 & 8.4.

¹²⁴ Paragraph 7.158.

¹²⁵ Appendix 7.11.

that cement producer. It is also possible that suppliers and customers may be less willing to allow price announcement letters to be circulated more widely within the market, if they were to contain customer-specific information about the prices to be charged.

13.187 However, to ensure that this remedy is sufficiently effective in addressing this aspect of the coordination AEC, we considered that it might be necessary to extend the prohibition to other cementitious material such as GGBS and on to suppliers of these cementitious materials other than the GB cement producers. We consider this and other design issues below.

Remedy design considerations

13.188 In considering the design of the remedy, we had regard to the risks typically associated with behavioural remedies, ie specification, circumvention, distortion and monitoring and enforcement risks. We considered the following specific design issues:

(a) *Scope of the remedy*: where we set out the appropriate scope of this remedy, in terms of products and providers.

(b) *Specification of the remedy*: where we consider: (i) how any prohibition of generic price announcement letters should be specified; and (ii) whether any prohibition should be accompanied by a template illustrating the type of communications that would be permissible with customers about pricing.

- *Scope of the remedy*

13.189 In relation to the scope of this remedy, we considered which products and providers should be subject to any prohibition.

13.190 In order to prevent the effectiveness of this remedy from being undermined, eg by GB cement producers using generalized price announcement letters for other products to signal changes in the price of cement, we took the view that it would be necessary to ensure that the prohibition extends to all forms of cementitious materials. This would include GGBS and PFA.

13.191 In terms of which providers should be covered by the remedy, we considered that generic price announcement letters, whether issued by the GB cement producers or other suppliers of cementitious materials, represented a feature of the GB cement markets which could have the potential to distort competition in the future absent their prohibition. We therefore considered it appropriate for this remedy to apply to all GB suppliers of cementitious materials in addition to the GB cement producers, including, for the avoidance of doubt, HCM, any other new entrant that owns a cement plant, including the new GB cement producer resulting from the implementation of our package of remedies, as well as GB cement importers and suppliers of GGBS and PFA (together, for the purposes of exposition, referred to as the GB cement suppliers). We would, however, exclude certain types of cement suppliers from the requirements of this remedy, depending on the nature of their principal activity, which might categorize them as a cement customer rather than a cement supplier, eg intermediaries such as builders' merchants.

13.192 The relatively wide scope of this remedy in terms of products and providers will ensure that the practice of sending generalized price announcement letters is effectively removed from the market and does not reappear in another form. In this context, we noted HCM's support for this remedy and considered that the extension of

the measure beyond the Top 3 cement producers whose behaviour had contributed to the coordination AEC was not especially onerous.

- *Specification of the remedy*

13.193 We now consider how a prohibition should be specified and whether those subject to this remedy should be required to use a set template for a customer-specific price announcement letter.

- *Specification of the prohibition*

13.194 We considered that any prohibition must be sufficiently clear as to the conduct we are seeking to prohibit. In particular, in relation to a prohibition of generic price announcement letters, we would need to consider its definition:

(a) By the term 'generic', we considered that it includes information expressed in a general manner, whether addressed to an individual customer or not, which is not specific to a particular customer's demand for cementitious products and would apply equally to any existing or new customer. This term should be clearly defined so as to exclude the use of customer-specific letters.

(b) By the term 'price', we considered this to include gross prices for cementitious products, percentage price increases and pricing structures (including discounts and rebates). We considered that this remedy should also apply to price movements and not just price increases since in a declining market, coordination may also be reached on the maximum price decreases that should be made, which would also result in realized prices being higher than might otherwise be the case. Other areas to consider as part of the implementation of this remedy would include whether a change in other prices, eg fuel surcharges, should be included in this definition.

(c) By the term 'letters', we considered this to include all modes of written communication made by GB cement suppliers to their customers, eg letters, notes, memoranda, emails and faxes.

13.195 In its response to the provisional decision on remedies, Cemex told us that it noted that this prohibition would apply to 'all forms of written communication'. It told us that it expected this prohibition to relate only to generic price announcements and sought confirmation from the CC that such a prohibition would not apply to 'other generic announcements', eg product launch announcements. It also told us that its price announcement letters not only contained a separate element for the fuel surcharge, but also 'separate charges [✂]'.¹²⁶

13.196 In response to Cemex's points above, we considered that the detailed specification of this remedy should be discussed further during the implementation of this remedy. In particular, we considered that what constituted a 'permitted generic announcement' would need to be carefully defined in order to prevent circumvention. In relation to Cemex's point concerning other charges, we note that our remedy applies to any changes that affect the overall price paid. We considered that such detail could be further discussed in the context of drafting the Order during the remedies implementation phase.

¹²⁶ [Cemex response to the provisional decision on remedies](#), Annex 2, paragraph 2.2.

- *On whether there should be a template for customer-specific letters*

13.197 We considered whether to provide a template price announcement letter, either as a mandatory format which must be used, or to illustrate the types of communication with customers which would be permitted in the future.

13.198 A potential benefit of this approach would be that it provides greater specificity to the remedy, making it easier for GB cement suppliers to comply with, and for customers and the appropriate monitoring authority to detect any divergence.

13.199 However, one potential risk of requiring a mandatory format would be that the GB cement suppliers may be less inclined to be flexible in the manner in which they communicated with their customers. Such action may also harmonize how they communicated with their customers and may remove the likelihood for further improvements in this area. Furthermore, the definition and interpretation of terminology may not be consistent across all of the GB cement suppliers and therefore imposing a template may remove these differentiations and add to the complexity of the implementation of this remedy.

13.200 We note that in its response to the provisional decision on remedies, Cemex agreed that a 'mandatory format' should not be used for price announcement letters.¹²⁷

13.201 We concluded that on balance, the costs of requiring the GB cement suppliers to use a set template for their price announcement letters outweighed its potential benefits, and therefore we would not seek to mandate the use of a template. However, to assist interested parties in understanding how we anticipate this remedy would work, we give, at Appendix 13.4, Annex B, an illustrative example of a customer-specific price announcement letter. In the absence of a mandatory use of a specific template, we do, however, propose that a customer-specific price announcement letter should specify:

- (a) the name of the customer and the effective date of any price change;
- (b) the current (or last) unit price paid by the customer;
- (c) the new unit price being proposed; and
- (d) the details of any other changes that affect the overall price payable.

Remedy implementation considerations

13.202 In our consideration of the implementation of this remedy, we looked at:

- (a) the instrument by which this remedy should be implemented, eg by way of the GB cement suppliers giving undertakings or by way of an Order;
- (b) the timetable for its implementation; and
- (c) how the remedy would be monitored and/or enforced.

¹²⁷ *ibid*, Annex 2, paragraph 2.3.

- *Instrument by which this remedy should be implemented*

13.203 Since the Top 3 cement producers did not object to this remedy proposal, with [X] and Lafarge Tarmac already putting in place changes to their processes,¹²⁸ we considered it unlikely that they would resist this remedy. Furthermore, given HCM's stance on these issues, ie that it did not use generalized price announcement letters, we also considered it likely that it would also agree to such a remedy.

13.204 We considered whether to pursue the implementation of this remedy through a series of undertakings or Orders. We noted that, in its response to the provisional decision on remedies, Cemex told us that this remedy should be adopted by Order.¹²⁹

13.205 There are a number of identifiable risks with implementation through undertakings:

- (a) Since we have decided that the scope of this remedy should include all cementitious materials, we may face some resistance from the GB cement suppliers to limit the remit of the undertakings. However, we note that we have received no responses from parties that the remit of the undertakings to include cementitious materials should be restricted.
- (b) We considered that entering into negotiations to seek agreement on undertakings with all of the GB cement suppliers would increase the complexity and length of time that would be needed to implement this remedy. We also considered that there was an increased likelihood that there would not be absolute uniformity in the undertakings each GB cement supplier signed up to.

13.206 Therefore, we concluded that the most expeditious means of implementing this remedy and ensuring uniformity in application was to do so by way of issuing an Order.

- *Timetable for implementation*

13.207 We considered that the implementation of this remedy would neither be difficult nor onerous. As mentioned above, [X] and Lafarge Tarmac have told us that they have already changed their practices and now send customer-specific price announcement letters.

13.208 Since this remedy would be capable of implementation within a short time frame, it is likely to be a timely and effective means of addressing the targeted conduct feature in relation to price announcement letters that contributed to our coordination AEC finding.

- *Monitoring and enforcement*

13.209 As this is a behavioural remedy, effective monitoring of compliance is important to ensure that it has the intended impact of addressing the specific aspect of the coordination AEC targeted by this remedy. We further considered that a prohibition of this nature is capable of effective monitoring in that it is a transparent and visible action by the GB cement suppliers (sending price notification, in whatever form) to its customers), and therefore any deviation would be capable of easy detection. We considered that the number of customers served by GB cement suppliers would be

¹²⁸ Lafarge Tarmac response hearing summary, paragraph 38.

¹²⁹ Cemex response to the provisional decision on remedies, Annex 2, paragraph 2.3.

sufficient to hold them to account and bring any concerns to the attention of the OFT (or the CMA after April 1 2014).

GGBS remedies

Summary of remedy

13.210 Figure 13.4 summarizes our remedy measures to promote competition in the GGBS supply chain and thereby address the AEC in GGBS and the GGBS-related AEC in cement and the resulting customer detriment.

FIGURE 13.4

Summary of remedy measure: GGBS remedies

We have decided the following measures in relation to this remedy:

Divestiture of an active GGBS plant

- Hanson should divest one of its three active GGBS plants. Hanson should notify the CC as soon as is reasonably practicable following the publication of this report, which GGBS plant it has selected for divestiture.
- The divestiture with the fewest risks, in our view, is for Hanson to divest its GGBS plant at Scunthorpe. A divestiture of the Scunthorpe GGBS plant should allow for: (i) Hanson's existing Calumite Ltd JV to continue operating on the Scunthorpe GGBS plant site; and (ii) the continued supply of GGBS used in an encapsulation product by Sellafield. In relation to the former, this would be subject to Hanson providing satisfactory undertakings that ensure that the operation of this JV does not compromise the ability of the Scunthorpe GGBS plant to compete independently from Hanson.
- The CC would also be prepared to consider the divestiture of one of Hanson's other two active GGBS plants at Port Talbot or Purfleet, if it could be shown that the additional risks associated with these divestitures could be adequately managed. Any divestiture of the Port Talbot GGBS plant should be accompanied by the divestitures of Hanson's Glasgow and Teignmouth depots.
- A GGBS plant divestiture should include the assets and operations required for it to compete on a stand-alone basis including, subject to the purchaser's requirements, its own vehicle fleet.

Consequential implications for GBS supply

- In order to ensure that the acquirer of the divested plant has a cost-effective and secure supply of GBS, Lafarge Tarmac should be required to continue with its GBS supply agreement with the acquirer of the divested GGBS plant and give effect to its novation and/or amendment and should thereby be required to enter into a supply contract with the purchaser of the divested plant on terms no less favourable than currently offered to Hanson for GBS. The resulting agreement must include a clause limiting the price of GBS similar to that contained in the current GBS agreements with Hanson to ensure that Lafarge Tarmac is not able to undermine the remedy by raising the price of GBS. The acquirer of the divested GGBS plant will also be granted:
 - (a) immediately following the completion of its acquisition, the right to grind any pre-existing stockpiles of GBS at the GBS plant which represents its primary source of GBS supply; and

(b) an option to take a proportion (eg up to a third) of any increase in annual GBS output (including pellite suitable for being ground into GGBS) produced by the Teesside GBS plant over and above the total GBS produced by the Teesside GBS plant during 2013. We would expect the amount of GBS potentially available to the acquirer of the divested GGBS plant under this option to increase further in the event that Hanson did not choose to take up its full entitlement to GBS produced at Teesside (current or historic) under its own agreement with Lafarge Tarmac.

Purchaser suitability

- The GGBS plant divestiture should be made to a purchaser who satisfies the CC's suitable purchaser criteria and therefore should not be made to another GB cement producer. To avoid circumvention of this requirement, any purchaser of a divested GGBS plant would be required to give an undertaking not to sell the acquired GGBS plant to a GB cement producer for a period of ten years without consent from the CC (or the CMA from 1 April 2014).

Remedy implementation

- A monitoring trustee should be appointed as soon as reasonably practicable following the publication of this report, who will be charged with overseeing Hanson's GGBS operations and ensuring the protection of the package of assets that will form part of any divestiture, together with overseeing the divestiture process. The monitoring trustee should report on the allocation of GBS volumes across the GGBS plants, and provide a monthly report to the CC on the financial performance of the GGBS plant subject to divestiture benchmarked against the performance of Hanson's remaining GGBS plants.
- As part of its oversight of the divestiture process, the CC will review any consequential amendments to the agreements governing the supply of GBS to ensure that these do not compromise the effective implementation of this remedy.
- From the date of signing the final undertakings, or the issuance of an Order (whichever may be applicable), the divestiture period allowed for the GGBS plant divestiture should not exceed [X] months.
- Hanson should periodically provide the CC with an update on the progress of its divestiture process against a timetable to be agreed with the CC. The CC reserves the right to appoint a divestiture trustee should the divestiture not be implemented within the divestiture period; or if the CC reasonably expects that the divestiture period would be likely to exceed the divestiture period.

How this remedy addresses the AEC and/or resulting customer detriment

13.211 Following publication of the Remedies Notice, we considered a range of options to address the AEC in GGBS and the GGBS-related AEC in cement. We summarize below parties' comments on the effectiveness of remedies to address these AECs, followed by our own assessment and conclusions.¹³⁰

¹³⁰ In its [response to the provisional decision on remedies](#), Hanson questioned the CC's power to impose a divestment remedy in relation to GGBS. In paragraphs 3.1.1 and 3.1.2 of the response, it notes that GGBS was not among the products that were referred by the OFT in its decision under section 131(1) of the Act, and that the CC's own definition of the 'relevant markets' under section 134(1) of the Act does not purport to include GGBS in the markets for cement. Hanson says that the CC 'has sought to establish jurisdiction on the basis that the exclusive GBS supply agreements represent conduct which amounts to an AEC' (paragraph 3.1.3). We explain the CC's jurisdiction to find an AEC in relation to GGBS in paragraphs 8.439–8.441. As regards remedies, the CC's task is not to remedy 'features' as such, but rather to remedy their AECs and/or the resulting customer detriment. The most effective means of remedying an AEC will often be to deal directly with one or more of the features giving rise to it, but the CC's overriding duty under [section 138](#) of the Act is to address the AEC and resulting customer

- *Parties' views on remedy effectiveness*

13.212 Our thinking about the specification of this remedy has evolved since the publication of the provisional decision on remedies, and we have considered parties' comments on the various iterations of this remedy. Parties' general views in relation to how this remedy addresses the AECs and/or resulting customer detriment which were submitted prior to the publication of the provisional decision on remedies can be found in Appendix 13.5, Annex A.

13.213 In the provisional decision on remedies, we consulted on a more extensive set of remedial actions than set out in Figure 13.4, comprising the divestiture of two GGBS plants and two GBS plants as well as the effective cessation of the GBS agreements between Hanson and Lafarge Tarmac. We set out below parties' general views on the effectiveness of this remedy as set out in their responses to the provisional decision on remedies.

13.214 In its response to the provisional decision on remedies, Hanson told us that the 'net effect' of these GGBS remedies, ie the divestiture of two GGBS and two GBS plants and the consequential termination of the GBS agreements, was likely to be as follows:¹³¹

- (a) the transfer of 'any perceived market power' upstream to the GBS supply level, and the 'significant increase in GBS prices upon liberating the steel and granulation industries from their current regime of price control', thereby undermining the ability of GGBS supplier(s) to compete on price; and
- (b) the 'limitation of Hanson's ability to compete in GGBS and the direct damage to Hanson as maintaining any position as a meaningful competitor (effectively transferring a perceived monopoly to an alternative supplier or, at most, creating a duopoly)'. Hanson added that the GGBS assets were highly likely to be acquired by RMX/concrete products producers given the 'general lack of interest in GGBS grinders', and that this could lead to a 'critical lack of liquidity' in the 'external' supply of GGBS to independents, thereby 'undermining the supposed benefits of any remedies by damaging the current arrangements which enable Hanson to ensure a steady supply of GGBS to the full range of players in the market and introducing foreclosure where it does not currently exist'.

13.215 Hanson also told us in its submission that the proposed GGBS remedies (should two GGBS plants be divested) would leave Hanson with [X], and that this would result in only one competitor, or at most two, that would focus on external supplies. It argued that this would result in either a monopoly or a potential 'collective dominance scenario'.¹³² It added that on the balance of probabilities, the GGBS remedies as proposed in the provisional decision on remedies were likely to create 'new risks for customers'.¹³³

detriment by such means as it considers 'reasonable and practicable' (section 138(2)), having regard to the need to find a solution that is 'comprehensive' (section 138(4)). In Annex II to its response (paragraph 1.3) Hanson again stated that section 131 of the Act 'sets the scope for the features that prevents [sic], restricts or distorts competition – i.e. the AEC', drawing the conclusion (paragraph 1.6) that this 'sets the boundaries for the CC in terms of what it can *remedy* under s134 of the Act' (emphasis in original). But as noted in paragraph 8.439, the boundaries set by the terms of the reference under section 131 relate to the markets in which the causative features must be found, rather than to the effects which must be remedied. Finally as Hanson observed in paragraphs 2.8 and 2.9 of Annex II to its response, the CC has also drawn conclusions from the extensive participation of Lafarge Tarmac and Hanson in both the GGBS supply chain and the GB cement markets, finding that this amounted to a further structural feature of the GB cement markets that contributed to the AECs. Identifying such a structural feature is entirely consistent with the CC's conclusion that cement and GGBS form distinct economic markets.

¹³¹ [Hanson response to the provisional decision on remedies](#), paragraph 1.5.5.

¹³² *ibid*, paragraph 5.14.

¹³³ *ibid*, paragraph 4.9.1.

13.216 Hanson told us that if it were required to divest its GGBS plants under the proposed remedy, it would divest two of its three operational GGBS plants, which it calculated at [X] per cent of its operational grinding capacity, and over [X] per cent of its 'total theoretical grinding capacity'. It told us that this would account for over half of the business for which Hanson had paid around £[X] million in 2006.¹³⁴ It also told us that under the proposed remedy, it would only leave Hanson with one GGBS plant that was co-located with a steelworks, and that this remaining plant would be its mothballed plant at Teesport. It added that Hanson would incur additional costs if it wished to restart this plant.¹³⁵ It also argued that this remedy would result in the termination of 'commercial agreements', which had formed the basis for major investments by Hanson.¹³⁶

13.217 Hanson argued that one new entrant would create a duopoly and that there was 'no reason to suspect that GGBS suppliers would be anything other than price takers in respect of the price of other cementitious alternatives'.¹³⁷ It added that even if there were two new entrants, this dynamic was unlikely to change. It told us that Hanson [X] remaining domestic GGBS suppliers would in effect act as a duopoly (or price takers of the cementitious price).¹³⁸

13.218 In its response to the provisional decision on remedies, Hanson argued that the CC's view that increasing the number of GGBS producers in GB would lower the competitive price of GGBS below the current price was 'merely theoretical', and took no account of the 'binding supply constraints on GGBS production'. It argued that these constraints meant that it was 'both natural and expected that, where demand for cementitious product exceeds GGBS production (as it does), prices would rise to the level of the next best alternative irrespective of the number of producers'.¹³⁹ It argued that given the 'binding supply constraints on GGBS production', it was likely that two GGBS producers would have 'exactly the same incentives as a single producer in pricing at a level where cement/PFA/imported GGBS was the competitive constraint'.¹⁴⁰

13.219 Hanson told us in its response to the provisional decision on remedies that the 'commercial and economic reality' was that there were only a 'limited number' of GBS and GGBS plants in GB, and that there were 'significant capacity constraints'.¹⁴¹ It also told us that the CC's assessment of the potential levels of GBS and GGBS available to the open market was based on the 'unrealistic assumption' that all the plants would operate at 100 per cent capacity. Hanson told us that this was 'commercially impossible', and that this assumed that there would be 'sufficient quantities of GBS to allow GGBS grinders to operate at this rate'. It argued that the CC was relying on 'hypothetical volumes' that were not produced in practice, and that this ignored the 'industrial realities' and the issues that commonly arose at the level of blast furnace production and granulation.¹⁴²

13.220 Hanson, in its response to the provisional decision on remedies, argued that the CC had not demonstrated the existence of the effect 'beyond the theoretical plane' that 'Hanson's presence in both the cement and the GGBS markets may weaken Hanson's incentive to lower GGBS prices (at the risk of cannibalising its own cement

¹³⁴ *ibid*, paragraph 4.9.1.

¹³⁵ *ibid*, paragraph 4.9.2.

¹³⁶ *ibid*, paragraph 4.9.3.

¹³⁷ *ibid*, paragraph 5.13.9.

¹³⁸ *ibid*, paragraph 5.13.10.

¹³⁹ *ibid*, paragraph 5.5.2.

¹⁴⁰ *ibid*, paragraph 5.7.

¹⁴¹ *ibid*, paragraph 5.13.

¹⁴² *ibid*, paragraph 5.13.3.

sales)'. It said that the CC had also not demonstrated that this effect was 'significant', and argued that if any such effect existed, it was likely to be 'weak'.¹⁴³

13.221 In its response to the provisional decision on remedies, Lafarge Tarmac argued that the proposed 'GGBS remedy' had 'considerable scope to lead to lower prices of GGBS, which in turn would be likely to lower the price of grey cement by substantially more than a divestment of [a cement plant at] Cauldon or Tunstead'.¹⁴⁴ It argued that there was 'spare capacity in the supply of GGBS', and that the proposed GGBS remedy would be expected to increase the supply of cementitious materials in GB by up to 0.8 Mt. It explained that to sell this additional amount, the price of GGBS would have to fall. It added that in a situation where GGBS was supplied by a non-GB cement producer, then there would be a greater incentive to reduce the price of GGBS because the 'new operator would not risk cannibalising some of its cement sales'. It argued that [§]. Lafarge Tarmac argued that this fall in the price of GGBS would result in CEM I prices having to reduce, given the substitutability of cement for GGBS.¹⁴⁵

13.222 Lafarge Tarmac submitted that Hanson currently not only had a 'limited incentive' to reduce GGBS prices given that this would cannibalize its sales of cement, but also it had a 'weakened incentive' to reduce the price of cement because this would cannibalize its GGBS sales. It argued that the latter 'cost of cannibalization' was substantially reduced as a result of the 'GGBS remedy'.¹⁴⁶

13.223 Aggregate Industries told us that our provisional findings in relation to GGBS and GBS were 'very specific to the operation of the cement market in GB, principally because these products are dependent on UK domestic steel production'. It added that as it was not active in the production of GGBS or GBS in GB, it would not provide comment on the effectiveness and proportionality of this remedy.¹⁴⁷

13.224 Whilst we received a very limited response to the provisional decision on remedies about this remedy from members of the public, we noted one comment highlighting that it 'may be more vital that a competitive market in GGBS' was available, citing that the Environment Agency was likely to introduce a 'carbon cap' requirement to reduce the carbon footprint of concrete, and that GGBS for a 'variety of technical reasons' was preferred to PFA, and could replace more CEM I. It added that this would be 'attractive from a carbon footprint perspective' as CEM I had the highest carbon footprint, and that 'it may not be easy to find alternatives with the same carbon performance' as GGBS.¹⁴⁸

- *Our assessment of how the remedy addresses the AEC/customer detriment*

13.225 The core of this remedy is a divestiture of an active GGBS plant by Hanson. This tightly defined, but nonetheless significant, change to the operation of the GGBS supply chain would have the effect of introducing a second GGBS producer not involved in GB cement production, therefore removing Hanson's exclusive territorial position and ending Hanson's domestic monopoly over the production of GGBS. This remedy would enable competition between rival GGBS suppliers to play a role in determining the price, quantity and specification of GGBS supplied to GB customers. This divestiture is supported by targeted interventions at the upstream GBS level of

¹⁴³ *ibid*, paragraph 5.6.

¹⁴⁴ [Lafarge Tarmac response to the provisional decision on remedies](#), p45.

¹⁴⁵ *ibid*, paragraph 98(b)(ii).

¹⁴⁶ *ibid*, paragraph 98(b)(ii).

¹⁴⁷ [Aggregate Industries response to the provisional decision on remedies](#), p3.

¹⁴⁸ Member of the public ([§]) [response to the provisional decision on remedies](#).

the supply chain that ensure that the new entrant into GGBS production has cost-effective and secure access to GBS, as well as the potential further to increase its GGBS production should the market expand in the future, to ensure that the opportunity for increased competition is not undermined, for example by an inability of the new entrant to access GBS.

13.226 Given that GGBS is both a potential input into the production of, notably, CEM III cement and a partial substitute for cement in the production of RMX and other downstream uses of cement,¹⁴⁹ we took the view that a remedy that was effective in generating competition to supply GGBS would address a number of aspects of the AECs and their resulting customer detriment that we have found:

- (a) First, the remedy would directly address underlying causes of the lack of competition in the GGBS supply chain that we have found gives rise to the AEC in GGBS and the GGBS-related AEC in cement. We would expect a more competitive market for GGBS to reduce prices of GGBS, thereby addressing the resulting customer detriment of high GGBS prices and its consequential effect on the price of blended cement and other downstream products in which GGBS is a component.
- (b) Secondly, we would expect that an effective GGBS remedy would have an indirect effect on cement prices by increasing the competitive constraint of GGBS on the price of cement, given that GGBS is a partial substitute for cement. This in turn could contribute, to some degree, to the reduction in the extent of the customer detriment arising from the GGBS-related AEC in cement and the coordination AEC in the GB cement markets by constraining the cement price that it is possible to achieve through coordination.
- (c) Thirdly, an effective GGBS remedy has some limited potential also to address indirectly the coordination AEC, by making coordination harder to sustain in the GB cement markets. For example, as set out in the previous subparagraph, a stronger constraint from GGBS pricing might reduce the potential gains from coordination, which could in turn affect the balance of incentives facing GB cement producers in choosing between competition and coordination and/or make it more difficult to sustain a coordinated outcome.

13.227 We noted Hanson's submissions about the potential risks to the effectiveness of this remedy, particularly in relation to how the GGBS market might operate with multiple producers of GGBS. We noted that the evaluation of these risks was made more complicated because there has been extremely limited opportunity for competition to develop in the supply of GGBS in GB, and that customers' experience of supplier competition has for three decades been dominated by a single supplier of domestic GGBS (first in the form of Civil and Marine, and then in the form of Hanson since 2006, with both having long-term and exclusive access to all of the GBS produced in GB), with minor penetration from GGBS imports.

13.228 Hanson's submissions highlighted three main risk factors in terms of the effectiveness of this remedy:

- (a) the risk that the remedy would create an 'effective monopoly', or at best a duopoly in GGBS and would therefore not materially increase competition relative to the current situation;

¹⁴⁹Paragraph 8.480(a).

- (b) the related risk that capacity constraints in the GGBS supply chain would prevent an improvement in market outcomes relative to the current situation; and
- (c) the risk that a divestiture of GGBS capacity, combined with consequential changes to the GBS agreements, would result in the strong market position currently enjoyed by Hanson 'moving up the supply chain' and that prices of GBS and/or BFS would rise such that GGBS customers would be no better off relative to the current situation.

13.229 We gave careful consideration to each of these risk factors.

13.230 In relation to the first risk factor (creation of a duopoly), we acknowledged that a divestiture would result in the creation of a single new GB producer to compete with Hanson, rather than a more fragmented market structure. We also noted Hanson's concerns about the impact of a divestiture of two active GGBS plants on its own competitive capability, but we judged that the prospect of these risks materializing with a single GGBS plant divestiture was low, and that a single plant divestiture would have significantly less impact on Hanson than two GGBS plant divestitures.

13.231 We took the view that the introduction of competition into the GGBS market was a significant step that would contribute significantly to addressing the AECs that we identified, and the resulting customer detriment. In our view, the restrictions that have prevented competition from developing organically in this market do not imply that a 'natural monopoly' exists, or that multiple GGBS producers cannot compete effectively with each other. We would expect a new GGBS producer, independent of the GB cement producers, to have strong incentives to maximize its sales of GGBS and that this new entry would, in turn, alter the incentives facing Hanson leading to changes in its conduct. In this way, we would expect the remedy to lead to a significant increase in competitive pressures and a consequent improvement in customer outcomes.

13.232 In relation to the second risk factor (capacity constraints), we noted first, as set out in paragraph 8.456, that even in the presence of capacity constraints, we would expect more competition in the GGBS market to bring substantial benefits to customers.

13.233 We considered that these benefits to customers, and the overall gains in economic efficiency arising from the remedy, would be greater still if there were scope to increase market output in a more competitive environment. In this context, we acknowledged that whilst there is currently excess grinding capacity to produce additional volumes of GGBS, the ability to expand GGBS production in GB is largely constrained by the production of domestic GBS, which ultimately relies on the extent of iron and steel production. However, subject to this overarching constraint, we considered that there was significant scope for more GB-produced GGBS to be supplied to customers in a more competitive environment. In particular:

- (a) While there is some dispute between Hanson and Lafarge Tarmac about their current size and usability,¹⁵⁰ we noted that 'stockpiles' of unprocessed GBS had accumulated within the period covered by our investigation and we would expect incentives to 'stockpile' GBS or GGBS to reduce substantially in a more competitive environment, thereby increasing their available supply and putting downward pressure on prices.

¹⁵⁰ In particular, Lafarge Tarmac told us that there was a substantial GBS stockpile that was currently available, which stood at [less than 1] Mt as at the end of FY12, which it forecast would double to [redacted] Mt by the end of FY13. Hanson estimated its current GBS stockpile at [less than 1] Mt, but considered this to be an 'absolute maximum', and that this figure was likely to be much lower at [redacted] Mt due to age and quality issues (see Appendix 13.5, Annex F).

(b) We noted that there was scope for the production of steel, and hence BFS and GBS, to increase over the coming years, particularly in relation to the Teesside steelworks (see also paragraphs 13.306 to 13.321). We would expect that, in a more competitive environment, suppliers of GGBS would have stronger incentives to ensure that any expansion in BFS and GBS production is translated into higher domestic sales of GGBS, thereby increasing the available supply of GGBS and putting downward pressure on prices.

(c) We noted that, at present, Hanson effectively decides what forms of GGBS should be offered to the market and at what quality (see paragraph 8.455). We would expect in a more competitive environment that suppliers of GGBS would have stronger incentives to maximize the volume of GGBS sold to GB customers and to take customers' views more strongly into account about issues such as the trade-off between quality and price.

13.234 In its response to the provisional decision on remedies, Hanson told us that the CC had not taken into account that a proportion of the GBS stockpile (which Hanson estimated to be around [X]) may be aged or low quality and therefore beyond reasonable industrial processing.¹⁵¹ Hanson also noted that during 2012, more GBS was processed into GGBS than was produced, thereby restricting such new volumes of GGBS to a 'mere 100 kt at the very most', or equivalent to around 1 per cent of the CEM I market by volume.¹⁵²

13.235 Hanson further argued¹⁵³ that any suggestion that additional GGBS volumes created by the GGBS remedies would result in reducing the price of CEM I was flawed, given:

(a) the CC's view that GGBS imports, which accounted for 10 per cent of the GGBS market, would not have a material impact on GGBS prices; and

(b) these 'additional volumes' would be at most 100 kt, if not zero or negative, based on 2012 figures.

13.236 Hanson also told us that on 29 October 2013, Tata Steel had announced job cuts at its Scunthorpe steelworks and that Tata Steel was reported to have blamed the cuts on 'prolonged weak demand in the construction industry'.¹⁵⁴ It added that the Scunthorpe steelworks now used only two of its four blast furnaces. It told us that whilst Tata Steel had announced a plan to reline one of its two blast furnaces there (which could have served to preserve and even boost production), the work that was scheduled to commence in October 2013 had not materialized.¹⁵⁵ Therefore, it argued that the 'CC's hypothetical suggestions regarding much higher steel and GBS volumes are not borne out'.¹⁵⁶ Hanson also provided a further submission on its views on the current state and outlook for the GB steel industry. We address these arguments in Appendix 13.5, Annex E, Supplement 6.

13.237 We noted these submissions by Hanson. However, based on our assessment of the evidence taken as a whole (see Appendix 13.5, Annex E, Supplement 6) we concluded that there is significant scope for GGBS supply to increase under a range of plausible future scenarios, such that we expect the change in incentives and behaviour brought about by this remedy to increase available supply and put downward

¹⁵¹ [Hanson response to the provisional decision on remedies](#), paragraphs 5.28 & 5.29.

¹⁵² *ibid*, paragraph 5.2.

¹⁵³ *ibid*, paragraph 5.13.2.

¹⁵⁴ *ibid*, paragraph 5.13.3.

¹⁵⁵ *ibid*, paragraph 5.13.4.

¹⁵⁶ *ibid*, paragraph 5.13.5.

pressure on GGBS prices. We also noted Hanson's submissions about the relative size of the GGBS and cement markets and consider the implications of these submissions further in the context of the overall remedies package in paragraphs 13.429 to 13.432.

- 13.238 We considered that the third risk factor (ie the transfer of market power up the GGBS supply chain) was currently being mitigated to a large extent through the terms of the BFS and GBS agreements which restrict the ability of Lafarge Tarmac and/or the GB steel producers to exercise market power by raising prices. We considered that these constraints could equally apply in a more competitive market for GGBS and have built this into the design of our remedy by ensuring that Lafarge Tarmac continues to supply the new entrant with GBS by novating or mirroring its existing GBS agreements with Hanson so far as this is practicable, taking into account any consequential amendments to the GBS agreements (see paragraphs 13.293 to 13.321).
- 13.239 We concluded that a divestiture of GGBS capacity, combined with supporting measures in so far as they are practicable, could be effective in addressing the AEC in GGBS and the GGBS-related AEC in cement and might also to an extent reinforce the impact of measures to address the coordination AEC. The entry of a new GGBS producer downstream that is independent of the GB cement producers is likely to result in a greater choice for customers, typically RMX and other concrete producers, in sourcing GGBS. This measure would result in a new entrant into GGBS production that would be incentivized to compete vigorously to enhance the performance of its own GGBS operations without facing a conflicting incentive to limit the competitive constraint provided by its GGBS operations on cement prices in order to preserve prices and profitability in the GB cement markets.
- 13.240 The extent to which the remedy will have these beneficial impacts would be determined in part by the design of the remedy, to which we now turn.

Remedy design considerations

- 13.241 We considered what interventions would be necessary to achieve a more competitive operation of the GGBS supply chain and hence address the AECs we found. Our assessment of these remedy design issues is structured as follows:
- (a) We consider whether it is necessary to divest GGBS capacity in order to address the AECs effectively (see paragraphs 13.242 to 13.257).
 - (b) We consider the appropriate number of GGBS plant divestitures (see paragraphs 13.258 to 13.266).
 - (c) We consider the suitability of the individual GGBS plants to form the basis of a divestiture package. As part of this assessment, we consider whether any additional operations or facilities need to be included in the divestiture package in order to give the acquirer the opportunity to expand (see paragraphs 13.267 to 13.292).
 - (d) We consider the implications of a GGBS divestiture at the GBS level of the supply chain and the GBS agreements that are necessary to ensure that a purchaser of a divested GGBS plant has secure and cost-effective access to GBS (see paragraphs 13.293 to 13.321).
 - (e) We consider issues relating to purchaser suitability and remedy implementation (see paragraphs 13.322 to 13.352).

- *Need for a GGBS divestiture*

13.242 We first considered ways in which greater competition might be introduced at the downstream level of GGBS production. We identified two main constraints on the scope for introducing future competition, arising from the current operation of the GGBS supply chain (see also paragraphs 8.480 to 8.486). These were:

- (a) severe limitations on the ability of a new entrant to source GBS cost-effectively given the exclusive long-term GBS agreements maintained between Hanson and Lafarge Tarmac, the sole producer of GBS in GB; and
- (b) the fact that Hanson currently owns all of the GGBS plants in GB and furthermore that only the GB cement producers currently have the potential capability to grind GBS into GGBS, subject to the appropriate modifications being made to their existing plant and equipment.

13.243 In this subsection, we consider the implications of the current pattern of ownership of GGBS grinding capacity for the design of an effective remedy. We consider the changes necessary to ensure that any new entrant is able to source GBS cost-effectively in paragraphs 13.293 to 13.321. We look first at ways in which competition might be introduced to supply GGBS, before considering alternative remedies to a divestiture of a GGBS plant.

- *Ways in which competition might be introduced to supply GGBS*

13.244 At present, Hanson owns all of the GGBS plants in GB. Therefore—assuming a new entrant could obtain access to GBS on a cost-effective basis (see paragraphs 13.293 to 13.321)—any scope for increased competition to supply GGBS would need to come from one of the following sources:

- (a) a GB cement producer modifying and adapting an existing clinker grinding mill to grind GBS into GGBS;
- (b) a party (not necessarily a GB cement producer) investing in the construction of a new GGBS plant; or
- (c) a party (not necessarily a GB cement producer) acquiring a divested GGBS plant(s) from Hanson as part of this remedy.

13.245 In relation to the first form of potential entry, whereby a GB cement producer modifies and adapts its existing clinker grinding mill for GGBS production, it would have two possible options:

- (a) to use its clinker grinding mill (subject to some modifications) to grind both clinker and GBS together (co-grinding) to produce pre-blended cement; and/or
- (b) to use a spare clinker grinding mill (subject to some modifications) as a dedicated GBS grinding mill (ie effectively converting a clinker grinding mill into a GGBS plant).

13.246 Based on our assessment in Appendix 5, Annex B, we found that the GB cement producers would potentially have the capability either to co-grind or convert their existing clinker grinding mills to grind GBS into GGBS, although this would be subject to additional investment, ranging from £[redacted] million (Cemex) to £[redacted] million (Lafarge Tarmac) per clinker grinding mill. We were told that this conversion could take between [redacted] months (Cemex) and [redacted] months (Lafarge Tarmac) to complete.

13.247 We considered whether the GB cement producers would have the incentive to invest in modifying their clinker grinding mills to co-grind and produce pre-blended cement (see Appendix 13.5, Annex B). Based on that assessment, we found that:

- (a) When faced with a choice of using the same grinding mill for either pure clinker grinding or co-grinding GBS and clinker, if we assumed that the variable costs involved would be the same for either grinding activity, then the relative price of CEM I and pre-blended cement is a relevant consideration. Given that average pre-blended cement prices were lower than average CEM I prices, a GB cement producer, when faced with a choice of utilizing its grinding mill capacity to produce either CEM I or pre-blended cement, would be more likely to produce CEM I at the expense of co-grinding rather than the reverse. In practice, we would also expect co-grinding to incur higher variable costs due to the additional coarseness of GBS compared with clinker. Therefore, this would have the effect of reducing the variable profit margins generated on pre-blended cement sales over CEM I sales.
- (b) There may be considerable inertia in relation to the uptake of pre-blended cement arising from: (i) GB cement producers deciding to co-grind, as mentioned above; and/or (ii) downstream cement customers deciding to purchase pre-blended cement, given that ‘self-blending’ by RMX producers to produce the desired blended cement in their concrete mix is predominantly the current industry practice in GB rather than purchasing pre-blended cement.
- (c) Given the different ‘optimal fineness’ for each of ground GBS and ground clinker, co-grinding may result in clinker being excessively ground and also require greater power consumption. Therefore there may be strong practical and financial considerations why GBS should be ground separately from clinker, and blended separately with CEM I cement at a blending station to produce pre-blended cement or self-blended by downstream concrete producers at their own plants.

13.248 In light of this assessment, we considered it likely that the other GB cement producers would have very limited incentives to co-grind clinker with GBS (see Appendix 13.5, Annex B). Entry by GB cement producers into GGBS production, should they be incentivized to do so, would be more likely to arise through investing into, and modifying, one of their spare clinker grinding mills for dedicated GBS grinding. However, we note that this would also require a relatively significant investment and that no other GB cement producer has to date entered into GGBS production in GB. Moreover, even if a GB cement producer decided to enter into GGBS production, this would still not address the extensive participation of GB cement producers in the GGBS supply chain (and the incentives to which this gives rise to maintain high GGBS prices) that is one of the underlying causes of the AEC in GGBS and the GGBS-related AEC in cement.

13.249 Given these concerns relating to the likelihood and effectiveness of potential entry by a GB cement producer other than Hanson into the production of GGBS, we next considered the second form of possible entry, whereby a new entrant (not necessarily a GB cement producer) might enter into GGBS production through the construction of a new GGBS plant.

13.250 Hanson told us that this option would first involve obtaining the relevant planning permissions, and then a further [redacted] months to construct the plant. According to Hanson’s own estimate of the gross replacement cost for each of its three active GGBS plants (including freehold land, silos and road infrastructure), the figures were: £[redacted] million for its Port Talbot GGBS plant (with nameplate production capacity of around [redacted]); £[redacted] million for its Scunthorpe GGBS plant ([redacted]); and £[redacted] million for

its Purfleet plant ([§]). Given the timescale and significant costs of constructing a new GGBS plant, we judged that de novo entry was very unlikely and significantly less likely in the short to medium term than a GB cement producer converting its existing clinker grinding mill for co-grinding or dedicated GBS grinding.

13.251 We also noted that Hanson's Port Talbot and Scunthorpe GGBS plants are each located next to one of Lafarge Tarmac's GBS plants. We therefore considered it likely that this would provide Hanson's GGBS plants with a significant advantage in relation to both their costs of sourcing GBS, and their ability to source a more secure and guaranteed level of GBS supply, over any potential new entrant whose production facilities did not share the same benefits of co-location with a source of GBS supply.

13.252 Based on our above assessment, we concluded that:

- (a) Hanson benefited from significant incumbency advantages as the only GB-based supplier of GGBS and having been so over a significant period of time.
- (b) Hanson benefited from the advantages associated with owning all of the GGBS plants in GB, including the advantages associated with GGBS plants being co-located with their respective sources of GBS supply, ie given that there can only be as many active GBS operations (or plants) as there are active steelworks (three at present), Hanson owns the three GGBS plants (two active and one mothballed) that are co-located, or located in close proximity to these GBS plants.
- (c) Given this, even if a new entrant were able to acquire GBS on a secure and cost-effective basis (see paragraphs 13.293 to 13.321), there is a significant risk that Hanson would remain as the only GGBS producer, given the costs and risks faced by a potential new entrant in relation to investing in new facilities and commencing its own GGBS operations.

13.253 For the reasons stated above, we concluded that it was unlikely that increased competition in GGBS would occur absent our remedy, and therefore a divestiture of one or more GGBS plants by Hanson was a necessary condition for a remedy to be effective in introducing competition into the GGBS supply chain.

13.254 We further concluded that a divestiture of a GGBS plant (or plants) to another GB cement producer would undermine the effectiveness and competitive impact of our remedy and fail to address the structural link between the GB cement and GGBS markets and the resulting incentives that this would create. This is because a purchaser of a GGBS plant(s) that is also a GB cement producer would be likely to face similar incentives to those of Hanson as a result of its co-participation in the GGBS and GB cement markets to maintain high GGBS prices. Therefore, we concluded that a GGBS plant divestiture by Hanson should be made to a purchaser that is independent of the GB cement producers.

- o *Alternatives to a GGBS plant divestiture*

13.255 In its response to the provisional decision on remedies, Hanson proposed a number of alternative options that did not require a GGBS plant divestiture. These included the following:¹⁵⁷

- (a) *The termination of the exclusive supply agreement at one plant only.* Hanson told us that this would be an adequate remedy. It told us that there were three supply

¹⁵⁷ *ibid*, paragraph 8.5.

agreements, each linked to a particular steelworks, and the termination of one of these could introduce the possibility of further competition into GGBS supply (in addition to imports). It argued that this would limit the threat to Hanson's supply route and its ability to offer GGBS of a consistent quality on a national basis as an alternative to cement and PFA.

- (b) *Price control and/or future loss of exclusivity (eg in five years' time)*. Hanson told us that this remedy would be proportionate and adequate to address the perceived GGBS-related AEC in cement. It argued that this remedy would introduce an immediate solution to the perceived high prices of GGBS, whilst allowing a suitable time for Hanson to obtain new secure supplies of GBS. It added that the certainty created by the termination of the exclusivity at a certain future date would allow potential new entrants into GBS grinding a lead time in which to develop new facilities and/or take over mothballed facilities.
- (c) *Any surplus GBS not required by Hanson at a GBS plant to be released to the market*. Hanson considered that whilst its view was that it fully maximized the use of available GBS supplies, to the extent that the CC had concerns, it told us that this would ensure that any additional GBS material would be available to the market to compete with Hanson material and imported GGBS.

13.256 Whilst Hanson did not necessarily view a price control remedy as a 'viable option', it told us that our concerns in relation to a price control for GBS based on difficulties in its specification, monitoring and enforcing and measures to prevent circumvention had been exaggerated. For example, in relation to specification, Hanson argued that if the CC concluded that GGBS prices were too high, then we should be able to specify what level of price we considered to be acceptable. Hanson also argued that in relation to such a price control for GGBS, no monitoring or circumvention prevention measures would be required as customers would be expected to monitor this themselves effectively.¹⁵⁸

13.257 In relation to each of Hanson's proposals above:

- (a) We considered that the loss of exclusivity from one or more of the GBS agreements was unlikely to be effective for the reasons set out in paragraphs 13.244 to 13.253, which suggested it was unlikely that entry would occur into the GGBS market absent a GGBS divestiture, even if the restrictions on Lafarge Tarmac from selling, or using itself, domestically-produced GBS were removed. We judged entry to be unlikely, even for Lafarge Tarmac, which would immediately have access to GBS for domestic GGBS production, absent the relevant clauses in the GBS agreements with Hanson. Consequently, this proposal would not effectively address the adverse effects on competition arising from Lafarge Tarmac's and Hanson's conduct in the GGBS market and their extensive participation in both the GGBS supply chain and the GB cement markets.
- (b) We considered that a price control would entail significant specification risks both in terms of the structure and the level of any control, particularly given that prices of GGBS have hitherto been subject to bilateral negotiation and have not previously been subject to any form of control. Such a measure would not do anything to enhance competition and would therefore need to be in place indefinitely, such that any distortions arising from misspecification would tend to increase over time. We also found it difficult to envisage a price control mechanism for GGBS that could operate without substantial monitoring and enforcement requirements.

¹⁵⁸ *ibid*, paragraph 8.6.

In relation to Hanson's proposal concerning the delayed termination of GBS agreements, we noted that new entry into GGBS production was unlikely to occur absent a divestiture of existing grinding capacity by Hanson for the reasons set out in paragraphs 13.244 to 13.253. Moreover, we considered it highly unlikely that Hanson would voluntarily sell its mothballed grinding capacity to introduce another domestic GGBS producer. The suggested timescale was a further factor limiting the effectiveness of this proposal.

(c) In relation to any GBS not required by Hanson being released into the open market, we considered that this alternative effectively maintained the status quo, save for the restriction contained in the GBS agreements that prevented Lafarge Tarmac from selling GBS to any other party that would produce GGBS other than Hanson. Given our assessment in paragraphs 13.244 to 13.253, we took the view that such a proposal is unlikely in itself to encourage any new entrants into GGBS supply, and hence is unlikely to be effective.

- *The number of GGBS plants to be divested*

13.258 In deciding how many GGBS plants should be divested, we considered the impact of various divestiture scenarios on active GGBS production capacity and production. We assumed for the purpose of this analysis that only the three active GGBS plants would form the basis of a potential divestiture (see paragraphs 13.288 to 13.291).

13.259 Based on the analysis in Appendix 13.5, Annex E, Supplement 1, Table 4, the share of GGBS production capacity accounted for by the Port Talbot, Scunthorpe and Purfleet GGBS plants was [15–25], [25–35] and [45–55] per cent respectively.

13.260 A divestiture of the largest GGBS plant by nameplate capacity, ie the Purfleet GGBS plant, would result in the creation of one new GGBS producer with a share of capacity of [45–55] per cent, with Hanson retaining [45–55] per cent. Conversely, a divestiture of the smallest GGBS plant, ie the Port Talbot GGBS plant, would result in the creation of an independent producer with [20–30] per cent capacity share, whilst Hanson would retain a [70–80] per cent share. If Hanson were to divest both its Port Talbot and Scunthorpe GGBS plants, this would result in [45–55] per cent of production capacity being under independent ownership, with Hanson retaining [45–55] per cent.

13.261 In its response to the provisional decision on remedies, Hanson told us that whilst the nameplate capacity of its Purfleet GGBS plant was around [X], the plant faced a number of significant constraints that meant that it could not grind more than [X] of GGBS each year without Hanson making a substantial further investment. We also noted that historic production volumes over the last three years had not exceeded [X] at the Purfleet GGBS plant.

13.262 The output of the three active GBS plants is more evenly distributed than capacity, such that an acquirer of one divested plant might be expected to account for around one-third of GB production of GGBS, with Hanson accounting for around two-thirds. If two active plants were divested to a single party, then these proportions would be reversed.

13.263 In the provisional decision on remedies, we took the view that a divestiture of a single GGBS plant would be insufficient, as it would leave Hanson in a position in which it owned over half of GGBS grinding capacity and faced only one domestic GGBS competitor. We therefore proposed in the provisional decision on remedies that Hanson should be required to divest two GGBS plants, though we did not rule out the

possibility in the provisional decision on remedies that both divested plants could be sold to the same purchaser.

13.264 In its response to the provisional decision on remedies, Hanson told us that if divestment of a GGBS plant was to take place, it should be sufficient to divest one GGBS plant and not two, with reference to the fact that the CC's desired new entry in GGBS could be proportionately achieved with one GGBS plant, as few real entrants would do so with two plants. It argued that in merger control investigations, the CC considered that to be 'considered a competitive constraint, entry or expansion should be of sufficient scope to deter or defeat any attempt by the merged firm to exploit any lessening of competition resulting from the merger'. It argued that whilst the CC usually examined the investment required for a new entrant to gain a much more limited share of supply, in this case the CC appeared to require that the new entrant gain a 45 to 55 per cent market share (where the Port Talbot GGBS plant alone would represent 20 to 30 per cent and still not be enough in the CC's view).¹⁵⁹

13.265 Hanson told us that there were a number of factors that cast doubt on Hanson's ability to supply GGBS externally if it were to divest two of its active GGBS plants:¹⁶⁰

- (a) A divestiture of two GGBS plants would reduce Hanson's GGBS capacity to a level where there might be a limitation on its external supplies. Hanson told us that its current internal supplies of GGBS were around [redacted] a year, compared with a maximum annual 'operating capacity' of the Purfleet GGBS plant of [redacted] (considerably lower than the nameplate capacity [redacted], which Hanson told us could only be achieved through a 'major investment'). It submitted that even if the Teesport GGBS plant were to be restarted, Hanson's maximum 'operating capacity' would only be [redacted], and that this was before BFS and GBS supply constraints had been taken into account.
- (b) A divestiture of both its Port Talbot and Scunthorpe GGBS plants would leave Hanson with only the mothballed Teesport GGBS plant that was co-located with a GBS plant. It argued that this would substantially increase Hanson's cost of production compared with any new competitors. It told us that the [redacted] GGBS plant already had the highest costs of production of Hanson's plants [redacted], and that this would undermine Hanson's ability to compete.
- (c) If Hanson were left with the Purfleet GGBS plant as its only active grinder and it had no exclusive supply agreements, then this would 'effectively remove Hanson's secure GBS supply lines'. It told us that any purchaser of the Teesside GBS plant (or Lafarge Tarmac) would have no obligation to supply the Purfleet GGBS plant with any GBS, [redacted].

13.266 We gave careful consideration to Hanson's comments and agreed with Hanson that—as with the cement plant divestiture remedy (see paragraph 13.62)—it was important to consider the incentives and competitive capability of the divesting party as well as the acquiring party. We considered that the competitive impact of this remedy would be enhanced if Hanson retained incentives and ability to supply significant volumes of GGBS to third parties. Consequently, we revised our view on this issue and came to the conclusion that requiring divestiture of a second active plant would not necessarily add materially to the effectiveness of this remedy. As requiring divestiture of two GGBS plants would clearly be more onerous than a single plant divestiture, we decided that Hanson should be required to divest one of its three active plants.

¹⁵⁹ *ibid.*, paragraph 8.5.4.

¹⁶⁰ *ibid.*, paragraph 5.13.7.

- *Assessment of the suitability of each GGBS plant as a basis for divestiture*

13.267 We next considered the suitability of each of the GGBS plants as the basis for a divestiture remedy. In Appendix 13.5, Annex E, we set out our analysis of a range of issues which we considered particularly relevant to the selection and design of an effective divestiture package, including:

- (a) continuity of supply risks concerning production of GBS;
- (b) likely approach of an operator of any divested GGBS plants to sourcing GBS; and
- (c) the distribution capabilities of GGBS plants.

13.268 Drawing on the analysis in Appendix 13.5, Annex E, we considered the overall merits of each of the GGBS plants owned by Hanson as the basis for a divestiture remedy. In this assessment, we looked at a range of factors including: its likely sources of GBS if it were operated independently of the other GGBS plants; any other strategic advantages or disadvantages of the GGBS plant; any practical issues associated with separating the GGBS plant from other aspects of Hanson's business; and the financial performance of each GGBS plant. Taken together, these factors are relevant both to the likelihood of achieving an effective disposal and of the purchaser of the divested plant being able to compete effectively against other GGBS and cement producers.

13.269 We looked first at each of the active GGBS plants, namely the Port Talbot, Scunthorpe and Purfleet GGBS plants, as divestiture of an active facility might normally be expected to carry fewer divestiture risks. We then considered whether either of the non-active GGBS plants (at Teesport and Llanwern) could form the basis of an effective GGBS divestiture remedy.

- *Assessment of the Port Talbot GGBS plant as a suitable basis for divestiture*

13.270 In terms of access to GBS, the Port Talbot GGBS plant benefits from being co-located with a GBS plant with significantly higher GBS production capacity than it could grind using its current facilities. This could provide a solid and secure basis for competition and could potentially provide any owner of the Port Talbot GGBS plant the ability to expand GGBS production capacity in the future.

13.271 We also noted that the Port Talbot GGBS plant is the only GGBS plant currently capable of shipping GGBS, which it currently does within GB to its Glasgow and Teignmouth depots (see Appendix 13.5, Annex E, Supplement 4). This represents an additional strategic advantage of this plant, were it to be operated in competition with other GGBS producers, as it would give the acquirer to extend the plant's catchment area.

13.272 In terms of its financial performance, during the period from FY10 to FY12, GGBS production volumes at the Port Talbot GGBS plant remained broadly stable at around [REDACTED]. Gross revenues increased from £[REDACTED] million to £[REDACTED] million, with unit gross revenue (a proxy for the average delivered price) increasing from £[REDACTED] to £[REDACTED] over the period. Both its EBITDA margin increased from [REDACTED] to [REDACTED] per cent, and its unit EBITDA increased from £[REDACTED] to £[REDACTED] (see Appendix 13.5, Annex E, Supplement 5, Tables 1 and 2).

13.273 In its response to the provisional decision on remedies, Hanson told us that if it were required to divest GGBS plants, then it would [REDACTED].¹⁶¹

13.274 We concluded that the Port Talbot GGBS plant could form a suitable basis for a GGBS plant divestiture, if divested with its Glasgow and Teignmouth depots, which form a key part of its GB distribution network. However, we noted Hanson's comments above and considered that the level of existing integration/self-supply with other Hanson operations represented a significant risk that would need to be overcome if this plant were selected for divestiture.

- *Assessment of the Scunthorpe GGBS plant as a suitable basis for divestiture*

13.275 The Scunthorpe GGBS plant is co-located with its local source of GBS, from which the Scunthorpe GGBS plant would be able to source most, if not all, of its GBS requirement even when operating at full capacity. The extent to which the Scunthorpe GGBS plant might require GBS from alternative sources would depend in part on the proportion of BFS processed into GBS compared with air-cooled slag.

13.276 In relation to a divestiture of the Scunthorpe GGBS plant under this remedy, we were made aware of its potential impact on two entities other than Hanson: Calumite Ltd (a JV between Hanson and US firm [REDACTED]) and Sellafield Ltd (Sellafield). Our consideration of the impact of a divestiture of the Scunthorpe GGBS plant on these parties is set out in Appendix 13.5, Annex E, Supplement 6. Based on our assessment in that annex, should the Scunthorpe GGBS plant be divested:

(a) *Calumite Ltd.* We would have some concerns in relation to Hanson's ability as a shareholder in the Calumite Ltd JV to continue to access the Scunthorpe GGBS plant site should it retain its JV, eg we would be concerned to ensure that Hanson did not influence the operation of the GGBS plant in any way should it be divested, and that Hanson would not be able to find out about the GGBS plant's operations and activities. We would therefore require Hanson to provide us with satisfactory undertakings that ensure that the operation of this JV does not compromise the ability of the Scunthorpe GGBS plant to compete independently from Hanson, eg through appropriate information barriers and/or confidentiality undertakings.

(b) *Sellafield.* We concluded that both Hanson and the new owner of the Scunthorpe GGBS plant should enter into negotiations to ensure that the current supply and quality of the cement powder blend required by Sellafield is maintained. Given the relatively small quantities of the cement powder blend required by Sellafield, we did not consider that this requirement would be significantly burdensome on either Hanson or the new owner of the Scunthorpe GGBS plant.

13.277 In its response to the provisional decision on remedies, Hanson told us that if it were to divest its Scunthorpe GGBS plant, [REDACTED].¹⁶² We considered Hanson's request to be acceptable to the extent that [REDACTED] (should the Scunthorpe GGBS plant be divested) would not have a material impact on the operations of the GGBS plant.

13.278 By way of financial background, GGBS production volumes at the Scunthorpe GGBS plant decreased from around [REDACTED] in FY10 to around [REDACTED] in FY12. Gross revenues decreased from £[REDACTED] million to £[REDACTED] million, with unit gross revenue increasing from £[REDACTED] to £[REDACTED] over the period. Whilst its EBITDA margin declined slightly from [REDACTED] to

¹⁶¹ *ibid*, Annex V, paragraph 12.

¹⁶² *ibid*, Annex V, paragraph 10.1.

[redacted] per cent, its unit EBITDA remained broadly flat at £[redacted] (see Appendix 13.5, Annex E, Supplement 5, Tables 1 and 2).

13.279 As part of Hanson's response to our request for details of the costs of divesting one GGBS plant, Hanson told us that there were a number of advantages in relation to the Scunthorpe GGBS plant. It cited that the central location of Scunthorpe provided a 'strong geographical range over major areas of conurbation, particularly with access to the South, Midlands and the North of England', and added that this was an indication that the Scunthorpe GGBS plant was likely to be the 'best located of the GGBS plants'. It also added that whilst the Scunthorpe GGBS plant had a co-located source of GBS supply, it also had the 'possibility of back-up' from Teesside, which was within 'relatively easy reach'. It added that this enabled the operator of the Scunthorpe GGBS plant to diversify its 'steel operator risk', having access to both Tata Steel and SSI. Hanson also told us that in terms of 'maximum operating capacity', the Scunthorpe GGBS plant was Hanson's largest GGBS plant. Hanson told us that, based on respective available GBS volumes for the full year 2012, Scunthorpe was the site with the largest volumes of GBS made available.

13.280 Subject to Hanson addressing our concerns in relation to the Calumite Ltd JV with satisfactory undertakings, we concluded that the Scunthorpe GGBS plant could form a suitable basis for a GGBS plant divestiture. In reaching this view, we had regard to Hanson's comments above, as well as our own assessment of the plant's capabilities. We also concluded that both Hanson and any new owner of the Scunthorpe GGBS plant should ensure that the current supply and quality of the cement powder blend required by Sellafield is maintained.

- o *Assessment of the Purfleet GGBS plant as a suitable basis for divestiture*

13.281 At present, the Purfleet GGBS plant takes GBS from the Port Talbot and Teesside GBS plants, as well as from imports. Hanson told us that in comparison with the GBS supplied directly from a GBS plant co-located at a steelworks, the GBS sourced from Port Talbot and Teesside, as well as from imports, represented three different sources of logistics costs for the Purfleet GGBS plant, [redacted]. Hanson also told us that its Purfleet GGBS plant was located on the River Thames and had a wharf and therefore could receive bulk deliveries of GBS.¹⁶³

13.282 Based on the evidence set out in Appendix 13.5, Annex E, Supplement 3, Table 1, we found that the Purfleet GGBS plant could source GBS somewhat more cheaply from imports from Belgium than it could from Lafarge Tarmac's Port Talbot and Teesside GBS plants. We noted that Hanson also told us that its GBS agreement with Lafarge Tarmac imposed a cap on how much GGBS it could import,¹⁶⁴ which Lafarge Tarmac confirmed was up to 200 kt of GBS from third parties for processing at Hanson's Purfleet GGBS plant. Lafarge Tarmac also told us that Hanson could source GBS from third parties where it could not supply sufficient GBS of such quality to meet Hanson's requirements.

13.283 Whilst the Purfleet GGBS plant is not co-located with a GBS plant, Hanson told us that [redacted].¹⁶⁵ It told us that GBS had to be imported by ship from the Teesside and

¹⁶³ Provisional findings, Appendix 7.6, paragraph 27.

¹⁶⁴ Hanson response hearing summary, paragraph 16.

¹⁶⁵ *ibid*, 23 July 2013, paragraph 31.

Port Talbot sites, and that it was also dependent on the GBS imported from Europe in order to allow GGBS production from its Purfleet GGBS plant.¹⁶⁶

13.284 We concluded that whilst the Purfleet GGBS plant was not co-located with a GBS plant, it had a strategic advantage in terms of its location, which enabled it to service the attractive London market and the markets in the South-East in relation to GGBS. These factors could increase its potential attractiveness as a divestiture package, though the relative complexity of its GBS supply arrangements and the current dependence on [REDACTED] are likely to complicate any divestiture process.

13.285 In its response to the provisional decision on remedies, Hanson told us that if it were required to divest GGBS plants, [REDACTED].¹⁶⁷

13.286 By way of financial background, between FY10 and FY12, GGBS production volumes at the Purfleet GGBS plant increased from around [REDACTED] to around [REDACTED]. Its gross revenues increased from £[REDACTED] million to £[REDACTED] million, with unit gross revenue increasing from £[REDACTED] to £[REDACTED] over the period. Its EBITDA margin fell from [REDACTED] to [REDACTED] per cent, and its unit EBITDA fell from £[REDACTED] to £[REDACTED] (see Appendix 13.5, Annex E, Supplement 5, Tables 1 and 2).

13.287 We concluded that there were some advantages that might make the Purfleet GGBS plant a suitable basis for divestiture, in particular it is the largest GGBS plant by nameplate production capacity at close to [REDACTED], although Hanson subsequently told us that in practice its actual capacity was closer to [REDACTED] (see paragraph 13.261 above), and also has direct and close access to the markets in London and the South-East. However, there are likely to be additional divestiture risks associated with the Purfleet GGBS compared with Scunthorpe or Port Talbot, in particular given that it is not co-located with its local GBS source as is the case for the other two active GGBS plants.

- *Divestiture of mothballed GGBS plants*

13.288 Our consideration of whether any of Hanson's two mothballed GGBS plant would form a suitable basis for divestiture is set out in Appendix 13.5, Annex E, Supplement 7. Based on this analysis, we concluded that we would expect there to be substantially higher divestiture risks in relation to divestiture of a mothballed GGBS plant than an active one. In particular, a mothballed plant would lack any recent historic track record of performance, would be without an established supply arrangement for GBS and may require further expenditure before it could be reactivated.

13.289 We considered these factors to be particularly acute for the Llanwern GGBS plant, which would clearly be incapable of forming the basis of an effective divestiture. These risks were somewhat lower for the Teesport GGBS plant, which, once re-activated, would be able to source its GBS from the nearby (though not co-located)

¹⁶⁶ We also noted that the Purfleet GGBS plant was Hanson's only GGBS plant that was covered under Phase III of the EU ETS. Hanson told us that the ETS primarily covered the Purfleet GGBS plant's combustion activities in relation to slag drying for the production of GGBS. Its other GGBS plants were opted out from Phase III of the ETS under the 'small emitter' opt-out scheme, which set target emission levels without any trading of carbon allowances being permitted. A relevant consideration for any purchaser would be the future costs of being part of the ETS going forwards, as the percentage of its free benchmark allocation of carbon allowances reduces over time. Since 2013 represents the first year of ETS Phase III, and given that the Purfleet GGBS plant was not part of the ETS during its previous trading phases, it would be difficult to assess the expected future impact of the Purfleet GGBS plant's participation in the ETS. However, given that carbon allowances currently trade below €5, together with the acknowledgement by the European Commission of the existence of a 'structural surplus' of carbon allowances under the ETS, which is expected to continue to depress carbon allowance prices, we did not expect the overall financial impact of this factor to be significant.

¹⁶⁷ [Hanson response to the provisional decision on remedies](#), Annex V, paragraph 9.1.

Teesside GBS plant. However, the divestiture risks for Teesport were also substantial.

13.290 In its response to the provisional decision on remedies, Hanson told us that if it were required to divest GGBS plants, [REDACTED].¹⁶⁸ We noted this comment; however, we judged that this was a risk that Hanson was best placed to manage. Hanson also told us that if a GGBS plant divestiture remedy involved a purchaser acquiring one of its active GGBS plants, combined with an option to acquire the mothballed Teesport GGBS plant in the future, then [REDACTED]. We noted this comment and considered that the current interrelationship between the Teesport and Purfleet GGBS plants and the Teesside GBS plant represented an additional source of complexity and risk in relation to the divestiture of the mothballed Teesport GGBS plant.

13.291 We concluded that the additional risks associated with divesting either of the currently mothballed plants would significantly compromise the effectiveness of this remedy and that Hanson should therefore divest an active GGBS plant.

- *Our conclusions on the suitability of each GGBS plant for divestiture*

13.292 Based on our assessment above, we concluded that each of Hanson's three active GGBS plants, in its own way, could represent a suitable plant for divestiture. The remedy with the fewest divestiture risks, in our view, is for Hanson to divest its GGBS plant at Scunthorpe. The CC would also be prepared to consider the divestiture of one of Hanson's other two active GGBS plants at Port Talbot or Purfleet, if it could be shown that the additional risks associated with these divestitures could be adequately managed. Divestiture of either of the two currently mothballed GGBS plants appeared to involve substantially higher risks and we therefore decided that Hanson should divest an active GGBS plant rather than a mothballed plant.

- *Ensuring secure and cost-effective access to GBS*

13.293 To be an effective competitor, the acquirer of a divested GGBS plant will require secure and cost-effective access to GBS. We considered the implications of this requirement for the design of our remedies and for the GBS agreements. In particular, we considered:

- (a) the acquirer's ability to source GBS domestically;
- (b) the terms on which GBS is supplied to the acquirer; and
- (c) the scope for providing the acquirer with additional sources of GBS.

- *The acquirer's ability to source GBS domestically*

13.294 We looked first at the issue of access to GBS. At present, the exclusive GBS agreements between Hanson and Lafarge Tarmac would preclude any acquirer of a GGBS plant, who did not have the benefit of a supply arrangement with Lafarge Tarmac, obtaining GB-produced GBS. Given the very limited scope for cost-effective and secure importation of GBS—particularly at the Scunthorpe and Port Talbot plants, where GBS could be sourced from their respective co-located GBS plants, should either of these be divested—it is essential that the acquirer has security of supply of

¹⁶⁸ *ibid*, Annex V, paragraphs 7.1 & 7.2.

GB-produced GBS to ensure that the acquirer of a divested plant is able to compete effectively.

13.295 We illustrate the operation of the GBS agreements in Appendix 13.5, Annex D, Figure 1, where we discuss how their operation would be affected by a GGBS plant divestiture.

13.296 Based on this analysis, there may be scope to divest the Scunthorpe GGBS plant along with its existing GBS supply agreement through a simple novation, mirroring or replication of that agreement, subject to addressing any potential issues that could arise from Hanson's remaining GGBS plants' competing claims for the supply of GBS from either the Scunthorpe or Teesside GBS plants. However, a divestiture of the Purfleet plant, or to a lesser degree the Port Talbot plant, is likely to be more complicated given the potential competing claims for GBS produced by the Port Talbot and Teesside GBS plants.

13.297 We concluded that some changes may be needed to the current GBS arrangements between Hanson and Lafarge Tarmac to facilitate any divestiture and to ensure that the divested GGBS plant continued to be supplied with GBS. We noted that, depending on the plant to be divested, and in light of the interaction between some of the GBS agreements, these changes may need to go beyond a simple novation of the relevant GBS agreement to the acquirer of the divested GGBS plant.

- *The terms on which GBS is provided to the acquirer*

13.298 We next considered how that access to domestic GBS supply would be on cost-effective terms. In its response to the provisional decision on remedies—in which we had taken the view that the remedy would require the effective cessation of all of the GBS agreements between Lafarge Tarmac and Hanson—Hanson told us that there was a 'prospect of the operators of the blast furnaces and the granulators immediately increasing their own sale prices for BFS and GGBS', [redacted]. It argued that this would serve to increase and ratchet up the input costs for the GGBS operators, negating the opportunity for price reduction in GGBS.¹⁶⁹

13.299 Hanson further submitted that the proposed GGBS remedies would be likely to transfer any 'alleged' monopoly power from the GGBS level to the GBS level in the supply chain, due to the 'limited transfer of GBS to the various GGBS grinders (particularly to those that are co-located)'.¹⁷⁰ It argued that the removal of the BFS and GBS agreements [redacted], which resulted in prices for GBS being, in theory, competitive.¹⁷¹ Instead, Hanson considered that, [redacted], GBS prices could potentially rise, seeking to exploit the 'perceived value of GGBS'.¹⁷²

13.300 We considered these submissions carefully. In Section 8, we found that Lafarge Tarmac's ability to exercise market power in the supply of GBS is currently restricted by the terms under which it produces GBS, for the following reasons:

- (a) the process of steel production, whereby the supply of BFS that is processed to produce GBS is determined by the iron and steel production decisions at the steelworks;

¹⁶⁹ [Hanson response to the provisional decision on remedies](#), paragraph 5.15.

¹⁷⁰ *ibid*, paragraph 5.17.

¹⁷¹ *ibid*, paragraph 5.18.1.

¹⁷² *ibid*, paragraph 5.18.2.

- (b) Lafarge Tarmac's obligations under the GBS agreements, where it is obliged to maximize the production of GBS and ensure its adequate supply to Hanson, which restrict Lafarge Tarmac's ability to influence GBS volumes; and
- (c) under the GBS agreements, the price paid by Hanson to Lafarge Tarmac for its GBS is determined as a percentage of achieved prices for GGBS, which restricts Lafarge Tarmac ability to influence the prices of GBS and GGBS.

13.301 We considered whether these constraints would continue to bind Lafarge Tarmac following a divestiture of a GGBS plant. Clearly such a divestiture would not change the nature of steel production or the process by which BFS was supplied to Lafarge Tarmac under the BFS agreements. We also saw no practical reason why the pricing mechanism in the current GBS agreements could not continue to apply equally to the supply agreement between Lafarge Tarmac and the purchaser of a GGBS plant. Given that this mechanism has been effective in constraining Lafarge Tarmac's prices to date, we concluded that it could be similarly effective in the context of a divestiture of a GGBS plant, as the specification, circumvention and enforcement risks normally associated with price controls would be greatly reduced.

13.302 Furthermore, given the scope that Lafarge Tarmac would otherwise have for exercising market power at the GBS level, we concluded that the continuation of this pricing mechanism—or one that was no less favourable to the acquirer than the current pricing mechanism is to Hanson—should remain part of the GBS supply agreement between Lafarge Tarmac and the acquirer following divestiture (or be incorporated into any new agreements depending on whether or not the requisite GBS agreement was simply novated).

13.303 We concluded that an essential component of the divestiture package would be a long-term supply agreement between the acquirer of the divested GGBS plant and Lafarge Tarmac. We therefore decided that Lafarge Tarmac should be required to enter into such an agreement with the acquirer, as part of the implementation of the remedy.

13.304 We expect the novation, mirroring or replication of one of the existing GBS agreements to provide a starting point for Lafarge Tarmac to meet this obligation. We noted that some limited consequential change may be required to other GBS agreements between Lafarge Tarmac and Hanson, but only because certain provisions of the existing agreements are drafted on the assumption that all of the GBS agreements, and associated plant, are in the ownership of the same person. However, these changes, which are consequential on the proposed divestment, do not require change to the terms of the existing agreements and it is envisaged that those terms would remain in place. To this end we expect Lafarge Tarmac and Hanson to cooperate with the CC to give effect to the divestiture and ensure that the new entrant has security of supply of GBS on similar terms to the existing Lafarge Tarmac–Hanson agreement in relation to that plant. As part of the implementation of the remedy, the CC will need to approve the final agreement between Lafarge Tarmac and the purchaser of the divested GGBS plant in order to ensure that the specification of this agreement provides the new entrant with long-term, secure and cost-effective supply and does not undermine the ability or incentive of the acquirer of the divested GGBS plant to compete effectively.

13.305 We considered that this requirement on Lafarge Tarmac to enter into a satisfactory supply agreement with the new entrant was the least onerous means of intervening at the GBS level of the supply chain to achieve an effective disposal, and hence would form part of an effective remedy to the AEC in the GGBS market and the GGBS-related AEC in cement. Consequently we decided not to require divestitures

at the GBS level of the supply chain, nor to require a more complex GBS auction mechanism as suggested by Lafarge Tarmac. We set out further detail of these alternative remedies in Appendix 13.6, Annex G.

- *The scope for providing the acquirer with additional sources of GBS*

13.306 A divestiture of a single GGBS plant by Hanson, along with a supply agreement between the purchaser and Lafarge Tarmac providing the purchaser with secure and cost effective access to GBS from the relevant GBS plant (ie as specified in the relevant GBS supply agreement), would go a long way towards remedying the AECs described in paragraph 8.485.

13.307 We considered whether further interventions were required in relation to access to additional GBS, in order to maximize the opportunity for competition arising from this remedy, and in particular whether the acquirer of the divested plant should be able to access other sources of GBS to provide it with opportunities to expand output beyond the level implied by the relevant GBS plant and agreement.

13.308 We considered whether the acquirer of the GGBS plant should have the ability to grind the pre-existing stockpile of GBS that exists at the relevant divested GBS plant. In this context, Hanson told us that 'were the CC to require Hanson to divest Scunthorpe (but retained concerns over access to GBS), then having responded on a without prejudice basis, it would not seem unreasonable for the acquirer to be given the right to grind the pre-existing stockpile of GBS that exists at Scunthorpe' and that the buyer might, in theory, find the access useful to boost or maintain production when required. Lafarge Tarmac told us that it would support this proposal. We concluded that the right to grind pre-existing stockpiles at the relevant GBS plant (whether this is at Scunthorpe or otherwise) should form part of the divestiture package.¹⁷³

13.309 We also explored whether there were ways in which the acquirer of a divested GGBS plant could be provided with access to GBS from more than one GBS plant.

13.310 In this context, Hanson told us that if the CC were considering the divestiture of the Scunthorpe GGBS plant, but considered that the right to a pre-existing GBS stockpile at Scunthorpe would be insufficient, it would, in theory, be possible for Hanson to make further supply of GBS available from Teesside. This could involve:

- (a) an arrangement whereby the acquirer of Scunthorpe would have access to up to 50 per cent of the existing stockpile at Teesside, such that the Teesside GBS stockpile could be split between Hanson and the acquirer; and
- (b) access to any future surplus supply of GBS produced at Teesside, on the basis of annual fresh GBS production that is surplus to Hanson's forecast demand from Teesside.

13.311 Hanson also told us that if even this were not considered sufficient, then further supplies could be obtained from the Port Talbot stockpile and any surplus on a similar basis.

13.312 An alternative method of achieving a similar end would be to remove the exclusivity clauses contained in the Lafarge Tarmac–Hanson GBS agreements as it relates to excess GBS, ie the prohibition on Lafarge Tarmac selling any excess GBS destined for cementitious use in the UK (see paragraph 7.295). This would allow Lafarge

¹⁷³ In this context, when referring to GBS output, we include pellite suitable for being ground into GGBS.

Tarmac to sell any GBS not used by Hanson to the acquirer of the divested GGBS plant, or to any other party. Removal of these clauses from the Lafarge Tarmac–Hanson GBS agreements might be expected to increase the incentives of Hanson (and of the acquirer of any divested GGBS plant) to compete to supply GGBS to GB customers, and might therefore enhance the impact of any divestiture on competition.

13.313 We considered it likely that a potential acquirer of a GGBS plant would be interested in being able to access additional GBS from a source other than the relevant GBS plant and that this could provide benefits to the acquirer in terms of having a secondary or ‘back-up’ source of GBS supply, in addition to providing the acquirer of the GGBS plant with potential scope for expansion. We took the view that a mechanism enabling the acquirer, as well as Hanson, to participate in any future expansion of the GGBS market (eg resulting from an increase in GB steel output and hence GBS output) would enhance the beneficial impact of this remedy on current and future competition, as well as increase the attractiveness of the divestiture package to potential purchasers. Either of the mechanisms set out in paragraphs 13.310 to 13.312 might have these beneficial effects.

13.314 We noted that the potential arrangements described by Hanson in paragraph 13.310 could provide the acquirer with an additional source of GBS—and that this may increase the attractiveness of the divestiture package to a potential purchaser and give it scope for expansion. However, we were concerned that if Hanson were able to determine how much of this alternative supply of GBS was made available to the acquirer of a divested GGBS plant, then this would leave Hanson largely in control of the extent to which the new entrant was able to expand its GGBS production. In addition, we had some concerns that this mechanism could increase the interdependence and information flow between the acquirer of the divested GGBS plant and Hanson, which might have a competition-dampening effect.

13.315 Hanson considered that the CC might be ‘overstating these concerns’, and told us that the mechanism would not involve Hanson controlling the amount of GBS supply available to the acquirer of the divested GGBS plant, and that the acquirer would have proper access to any GBS not covered by Hanson’s forecast demand. It added that if the CC had any concerns that the forecast GBS demand could be manipulated by Hanson, then ‘suitable anti-avoidance measures’ could be included. In response to our concerns in relation to interdependence and information flow, Hanson told us that the contractual relationship could be between Lafarge Tarmac and the acquirer (and not between Hanson and the acquirer), ie Hanson would have a right under its contract with Lafarge Tarmac to 50 per cent of GBS stockpiles and such GBS as is covered by its forecast demand. It added that the acquirer of the GGBS plant would have access to the rest under its contract with Lafarge Tarmac, and therefore Hanson would not have any visibility of this.

13.316 We noted these comments, but considered that a preferable and more effective mechanism for enabling the acquirer of a divested GGBS plant to participate in, and benefit from, any future market expansion would also allow for the acquirer to be granted an option, as part of the divestiture package, to take a proportion of any increase in annual GBS output¹⁷⁴ from the Teesside GBS plant over and above the total GBS production level in 2013. This would provide the acquirer with a clear-cut entitlement to additional GBS, in the event of market expansion, that was outside the influence of Hanson. We have focused on the Teesside GBS plant as this is where the outlook for growth in the GB steel industry currently appears strongest.

¹⁷⁴ See previous footnote.

13.317 The precise details of such arrangements would necessarily be a matter for commercial negotiations, subject to CC oversight. However, we would expect such an option to account for a significant proportion—for example, up to a third (given that the acquirer would own one of three active GGBS plants)—of any additional GBS production at the Teesside GBS plant over and above 2013 production levels. The option to acquire GBS and the amount of GBS to be acquired should be exercisable up to a specified limit, at the request of the acquirer of the divested GGBS plant. We would also expect the amount of GBS potentially available to the acquirer of the divested GGBS plant to increase further in the event that Hanson did not wish to take up its full entitlement to GBS produced at Teesside (whether this be ongoing or historic production) under the terms of its own agreement with Lafarge Tarmac. The terms (including pricing) on which GBS is supplied to the acquirer of the divested GGBS plant should be broadly equivalent to those on which Hanson currently acquires GBS from Lafarge Tarmac at Teesside.

13.318 In relation to this option, Hanson told us, on the stated-without-prejudice basis, that it considered that this ‘solution would potentially be workable to address any theoretical concerns the CC has in relation to a one-site divestment’, subject to some of its ‘general reservations’. It urged the CC to consider the ‘specified limit’ carefully and that it should be set at an ‘appropriate level’, but no more than one-third of the increase in GBS volumes over 2013 levels, to ensure that Hanson’s Teesport GGBS plant did not become a ‘stranded asset’ through a lack of access to any increased GBS production at Teesside, which Hanson considered would increase the cost of the remedies.

13.319 We considered Hanson’s argument in relation to whether the level of the ‘specified limit’ (described above) might result in Hanson’s Teesport GGBS plant effectively becoming a ‘stranded asset’. We note that based on the Teesside steelworks’ expected FY13 out-turn of over [redacted] of steel production, then the implied GBS volumes of around [redacted] would be sufficient for both Hanson’s active Purfleet GGBS plant ([redacted] GGBS production capacity based on Hanson’s recent submission) and mothballed Teesport GGBS plant ([redacted]). Therefore, unless Hanson decides to invest to increase the operational grinding capacity at its Purfleet GGBS plant, then any GBS volumes over FY13 levels from Teesside would not be required by either of Hanson’s Purfleet or Teesport GGBS plants. Therefore, we considered that Hanson’s concerns would only be a relevant consideration if it decided to increase ‘operational capacity’ at its Purfleet GGBS plant, and would not affect the viability of its mothballed Teesport GGBS plant. We note, however, that the Purfleet GGBS plant has nameplate capacity of around [redacted], which Hanson told us it could not currently achieve without significant investment (see paragraph 13.261). Given this, and in light of the parameters set out in paragraph 13.317, we concluded that there was little risk of this aspect of the remedy having the result of stranding the Teesport GGBS plant.

13.320 We note that this aspect of the remedy could be given effect through changes to the GBS agreements between Lafarge Tarmac and Hanson. However, it need not do so. This measure is designed to ensure that the entrant is able to acquire a proportion of increased and/or unused GBS production at Teesside, and there are various ways in which this might be achieved.¹⁷⁵ During the remedy implementation stage, we will require Lafarge Tarmac and Hanson to work with the CC to identify how this measure may best be put into effect. We will wish to review the detail of any such arrangements

¹⁷⁵ For example, an alternative to changing the GBS agreements might be for Hanson to grant the acquirer an option to take a proportion of Hanson’s GBS entitlement from Lafarge Tarmac under the existing GBS agreements. In considering the precise mechanism through which this remedy is given effect, the CC will look carefully at any information flow between Hanson and the acquirer in order to ensure that competition is not harmed, as a result. See also Hanson’s comments in paragraph 13.315.

that form part of the divestiture agreement, in our role of overseeing the divestiture process, to ensure that they provide sufficient scope for the acquirer to participate in market expansion and that they do not compromise the independence of the acquirer from Hanson or otherwise restrict competition. Subject to reviewing the detail of such arrangements during the remedies implementation stage, we decided to require Hanson to include, as part of the divestiture package, an option to acquire GBS produced at Teesside, in line with the considerations set out in paragraphs 13.316 and 13.317.

13.321 In light of this decision, we did not consider it necessary to intervene specifically in relation to the exclusivity clauses, or other aspects of the GBS agreements (see paragraph 13.312), because such further intervention is not required in order to achieve an effective divestiture remedy. However, we would expect Lafarge Tarmac, Hanson and the acquirer of the divested GGBS plant to ensure that any agreements which they enter into, or maintain in force, following implementation of this remedy are compliant with domestic and EU competition law (see Appendix 13.8).

- *Purchaser suitability*

13.322 In addressing purchaser risks, we considered both the availability of suitable purchasers, and the purchaser suitability criteria that should be applied. While we did not need to identify and approve an acquirer during this investigation, we wished to be satisfied that suitable purchasers were likely to be forthcoming. We first considered the views of parties in relation to purchaser availability.

- *Purchaser availability*

13.323 In its response to the provisional decision on remedies, Hanson told us that it had ‘significant doubts’ over its ability to find more than one buyer of a GGBS plant.¹⁷⁶ It added that potential purchasers were more likely to be attracted to GGBS assets if they had downstream businesses, and stated that the ‘only expression of potential interest in GGBS’ was from Breedon Aggregates, a major RMX producer, and that, in Hanson’s view, the most likely ‘non-vertically integrated’ potential purchasers, CRH and CPV, had already rejected the possibility of purchasing the GGBS assets.¹⁷⁷

13.324 Breedon Aggregates told us that it would be interested in acquiring GGBS production capacity subject to price and the long-term security of supplies from the steel industry.¹⁷⁸

13.325 MI told us that it might be interested in purchasing divested GGBS assets subject to the acquisition price. It added that it would be more attractive to acquire both GBS and GGBS plants as it would provide it with more control over its cost base.¹⁷⁹

13.326 The following parties expressed no interest in any GBS or GGBS plant divestiture:

(a) CRH told us that it was not involved with GBS or GGBS production elsewhere, and it was [redacted].¹⁸⁰

¹⁷⁶ [Hanson response to the provisional decision on remedies](#), paragraph 5.13.10.

¹⁷⁷ *ibid.*, paragraph 5.13.11.

¹⁷⁸ *ibid.*, paragraph 27.

¹⁷⁹ [Mittal/HCM response hearing summary](#), paragraph 46.

¹⁸⁰ [CRH response hearing summary](#), paragraph 21.

(b) CPV, which operates Dragon Alfa, told us that it [REDACTED].¹⁸¹

13.327 In relation to the availability of purchasers for a GGBS plant divestiture package, whilst we received limited expressions of interest from the parties we spoke to, we considered that there would be likely to be interested bidders through a wider and more extensive market-testing process, in particular for a GGBS plant from integrated aggregates and concrete producers that may benefit from having its own source of GGBS as a cement replacement. At this stage, we would not preclude the existence of potential purchasers operating outside the GB construction sector, as well as the existence of possible financial buyers, eg private equity firms.

o *Purchaser suitability—views of parties*

13.328 A number of parties commented about the characteristics of a suitable purchaser of a GGBS plant:

(a) Breedon Aggregates considered that a buyer of a GGBS plant that was independent of any of the GB cement producers was likely to compete ‘vigorously’ against the GB cement producers.¹⁸²

(b) Aggregate Industries told us that [REDACTED] there appeared to be a captive supply chain between GBS and GGBS.¹⁸³

(c) MI told us that it would be more attractive to acquire both GBS and GGBS activities as it would provide it with more control over its cost base.¹⁸⁴

(d) Tata Steel told us that it [REDACTED].¹⁸⁵

(e) SSI told us that a separation of production at the upstream and downstream levels would enhance competition, and that common ownership would restrict competition for both the sale and purchase of materials, much as the exclusive agreements did at present.¹⁸⁶ It also told us that if a GGBS plant were sold to one of the GB cement producers, there was a strong likelihood that the AEC would continue, albeit in a slightly different form. It therefore considered that a buyer should be a genuinely new entrant that was independent of the existing Majors.¹⁸⁷

13.329 In its response to the provisional decision on remedies, Hanson told us that if a purchaser of a GGBS plant had an existing downstream business, it was likely that this new GGBS supplier would have less capacity to supply external markets, in particular the independent RMX sector. It argued that this could create a ‘real risk of foreclosure compared with the current situation’. It argued that if the impact of the remedies was ‘to create a number of vertically integrated players with limited capacity or willingness to supply external customers, the industry will have lost a supplier (Hanson) with the capacity and willingness to supply external customers’.¹⁸⁸

13.330 Hanson argued in its response to the provisional decision on remedies that there was also a risk that a purchaser of a GGBS plant might view its asset as a ‘flexible’ resource, and decide to convert the GGBS plant to produce cement instead of

¹⁸¹ CPV response hearing summary, paragraph 29.

¹⁸² Breedon Aggregates response hearing summary, paragraph 26.

¹⁸³ Aggregate Industries response hearing summary, paragraph 32.

¹⁸⁴ Mittal/HCM response hearing summary, paragraph 46.

¹⁸⁵ Tata Steel response to Remedies Notice, p3, paragraph d).

¹⁸⁶ SSI response to Remedies Notice, p2, paragraph D.

¹⁸⁷ *ibid*, p3, paragraph E(ii).

¹⁸⁸ Hanson response to the provisional decision on remedies, paragraph 5.13.12.

GGBS. It argued that this would result in GGBS capacity being removed from the market, and a lessening of GGBS supply, as opposed to an increase in GGBS competition.¹⁸⁹

- *Our conclusions on GGBS plant purchaser suitability*

13.331 Our guidance indicates that the CC would expect suitable purchasers to:¹⁹⁰

- (a) be independent of any divesting party or any related party;
- (b) have appropriate expertise, commitment and financial resources to operate and develop the divestiture business as an effective competitor; and
- (c) not itself create further competition or regulatory concerns.

13.332 As mentioned earlier, in order to reduce the extent and impact of the structural link between the GB cement markets and the GGBS supply chain and address the incentives that arise from this structural link, we concluded that a key criterion in relation to achieving an effective remedy should be that a buyer of a GGBS plant must be fully independent of the GB cement producers. We therefore concluded that no GB cement producer could be a purchaser of a divested GGBS plant.

13.333 Based on our guidance and the views of parties mentioned above, we concluded that the assessment of the suitability for a purchaser of a GGBS plant would follow the criteria set out in our guidelines, with the following caveats:

- (a) To ensure full independence from the divesting party and to prevent any future competition concerns, a suitable purchaser must not be one of the GB cement producers. We were less concerned about integration of a purchaser into RMX or other building materials products and have not specified restrictions at this level.
- (b) In relation to a purchaser having the necessary expertise, commitment and financial resources, whilst a purchaser with some experience in the construction and heavy building materials industry may be suitable, we would not rule out other possible purchasers that may be appropriately qualified to operate a divested operation. In assessing this criterion, we would have regard to potential acquirers' plans for the business in the light of Hanson's comment in paragraph 13.330.

13.334 Since we have not fully ruled out the possibility that GB cement producers might in future enter into GGBS production themselves, and to ensure that the remedy is effective in addressing the adverse effects that result from the structural link between the GGBS and cement markets, we decided to place a constraint on the ability of a GGBS purchaser to sell its acquired GGBS plant to a GB cement producer. We decided that any purchaser of a divested GGBS plant should be required to give an undertaking not to sell the plant to a GB cement producer either for a period of ten years or without consent from the CC (or the CMA from 1 April 2014).

Remedy implementation considerations

13.335 We consider the implementation of the various aspects of this remedy, including how we aim to achieve a timely divestiture. We also consider how a divestiture package might be protected until completion of its sale.

¹⁸⁹ *ibid*, paragraph 5.13.13.

¹⁹⁰ The Guidelines, [Annex B](#), paragraph 17.

- *Achieving a timely divestiture*

13.336 In relation to ensuring a timely divestiture, we asked parties what timescale should be allowed for the implementation of any divestiture; and whether and under what circumstances a divestiture trustee should be appointed.

13.337 Hanson considered that any divestiture would take a significant amount of time.¹⁹¹ It told us that one complication in relation to a divestiture process would be the number of parties involved [§]. It added that any transaction would require a potential buyer to conduct a significant amount of due diligence to assess [§]. It considered that these aspects would considerably add to the period of negotiation required for any divestiture process.¹⁹²

13.338 In its response to the provisional decision on remedies, Hanson told us that if GGBS plant divestitures were required, then the CC should consider delaying the implementation of the GGBS remedies until the remedies in the cement market had completed and could be assessed, to enable the CC to have due regard to any reducing cement price that impacted and constrained the substitutes market. Hanson considered that a period of [§] months from completion of the cement plant divestiture would be necessary for such purposes.¹⁹³ Hanson also told us that it was long established that the CEM I price impacted and constrained GGBS prices, although the contrary had never been the case.

13.339 In its response to the provisional decision on remedies, Hanson also told us that the CC should allow sufficient time in the context of the complexities of divesting GGBS assets. It argued that, given the specific arrangements with regard to the GGBS sites [§], the divestment process would carry a relatively high degree of complexity.¹⁹⁴

13.340 Hanson told us that any purchaser/new entrant would need certainty on the ownership of the GBS plants and the terms offered by such operators for the supply of GBS. [§]¹⁹⁵

13.341 Tata Steel told us that if a divestiture of a GBS plant or a GGBS plant was required, it should complete at the 'earliest possible opportunity', but if not, within six months, which it considered to be the 'standard model' operated by the CC.¹⁹⁶

13.342 We considered that the longer the divestiture period, the greater the asset risk, in particular given the incentives of Hanson and Lafarge Tarmac to act in the interests of their respective cement operations at the expense of their respective GGBS and GBS operations. We agreed with Hanson that progress would need to be made in determining appropriate GBS agreements for the new entrant, as an early stage of the divestiture process. However, we did not consider that this would need to extend the divestiture period to a material degree.

13.343 We therefore decided that from the date of signing the final undertakings, or the issuance of an Order (whichever may be applicable), the divestiture period should not exceed [§] months for the GGBS plant divestitures.

¹⁹¹ [Hanson response hearing summary](#), 23 July 2013, paragraph 32.

¹⁹² *ibid*, 2 July 2013, paragraph 50.

¹⁹³ [Hanson response to the provisional decision on remedies](#), Annex V, paragraph 2.1.

¹⁹⁴ *ibid*, Annex V, paragraph 2.2.

¹⁹⁵ *ibid*, Annex V, paragraph 2.3.

¹⁹⁶ [Tata Steel response to Remedies Notice](#), p5.

13.344 We would also require both Hanson and Lafarge Tarmac to provide the CC with periodic updates on the progress of their role in the divestiture process against a timetable to be agreed with the CC.

13.345 We will reserve the right to appoint a divestiture trustee should the divestiture not be implemented within the maximum divestiture period; or if we reasonably expect that the divestiture period would be likely to exceed the relevant maximum divestiture period.

- *Protecting the divestiture package*

13.346 SSI told us that a speedy process would be the most acceptable way of achieving our remedy objectives, and that a speedy process seemed to be expected by the industry players.¹⁹⁷ It added that if a speedy process could be achieved, trusteeship or other arrangements should be unnecessary, and a divestiture trustee should not be unnecessary if the CC's decisions were implemented promptly.¹⁹⁸

13.347 Tata Steel told us that [REDACTED].¹⁹⁹

13.348 Tata Steel also told us that [REDACTED].²⁰⁰

13.349 While Hanson would have an incentive to maximize its sale proceeds, it would also have an incentive to degrade the performance of the GGBS plant to be divested to weaken any future competitive constraint that GGBS might exert on cement going forwards.

13.350 We therefore decided that a monitoring trustee should be appointed as soon as reasonably practicable following the publication of our final report, who will be charged with ensuring the protection of the package of assets that will form part of any divestiture, as well as overseeing the divestiture process.

13.351 As part of its engagement, the monitoring trustee should have oversight of both GGBS and GBS operations, given the integrated nature of the current supply arrangements, in particular monitoring the allocation of GBS volumes across the GGBS plants, and provide a monthly report to the CC on the financial performance of each GGBS plant and GBS plant subject to divestiture benchmarked against the performance of the divesting parties' remaining plants.

13.352 In addition, as part of our oversight of the divestiture process (and as set out in paragraph 13.304), we reserve the right to review any GBS supply agreements (between Hanson, the acquirer of the divested plant and Lafarge Tarmac, as the case may be) governing the supply of GBS to ensure that these do not compromise the effective implementation of this remedy.

Remedy options not being taken forward

13.353 We considered a number of other remedy options that we have decided not to include in our package of remedies. Our assessment of the remedy options we have not pursued and our reasons for not including them in our package of remedies is set

¹⁹⁷ SSI response to Remedies Notice, p3.

¹⁹⁸ *ibid*, p3.

¹⁹⁹ Tata Steel response to Remedies Notice, p5.

²⁰⁰ *ibid*, p5.

out in Appendix 13.6. These included options set out in our Remedies Notice, as well as proposals or suggestions from various parties. These are:

- (a) RMX plant divestitures by one or more of the Top 3 cement producers (Appendix 13.6, Annex A);
- (b) the creation of a national cement buying group (Appendix 13.6, Annex B);
- (c) recommendations on the publication of ETS emissions data (Appendix 13.6, Annex C);
- (d) divestitures of stand-alone grinding stations (Appendix 13.6, Annex D);
- (e) information barriers between cement and RMX operations (Appendix 13.6, Annex E);
- (f) mandatory competitive tendering on cement cross-sales (Appendix 13.6, Annex F);
- (g) alternative remedies for GBS supply (Appendix 13.6, Annex G); and
- (h) remedy options ruled out in the Remedies Notice (Appendix 13.6, Annex H).

13.354 For each of the remedy options listed above, we set out in Appendix 13.6 a description of the remedy option and the views of parties on the remedy option concerned, before setting out our reasons for not taking the remedy option forward.

Assessment of relevant customer benefits

Framework for assessing RCBs

13.355 In deciding the question of remedies, the CC may also in particular 'have regard to the effect of any action on any relevant customer benefits of the feature or features of the market concerned'.²⁰¹ RCBs are defined in the Act and are limited to benefits to relevant customers in the form of:²⁰²

- (a) lower prices, higher quality or greater choice of goods or services in any market in the UK (whether or not the market to which the feature or features concerned relate); or
- (b) greater innovation in relation to such goods or services.

13.356 The Act provides that a benefit is only an RCB if the CC believes that:²⁰³

- (a) the benefit has accrued as a result (whether wholly or partly) of the feature or features concerned or may be expected to accrue within a reasonable period of time as a result (whether wholly or partly) of that feature or those features; and
- (b) the benefit was, or is, unlikely to accrue without the feature or features concerned.

²⁰¹ Section 134(7) of the Act.

²⁰² Section 134(8)(a) of the Act.

²⁰³ Section 134(8)(b) of the Act.

13.357 We focus our assessment on the effects of our package of remedies on RCBs, and on the nature and size of any RCBs, and their expected duration, and whether they are likely to be retained if we implement our package of remedies.²⁰⁴

Our assessment and conclusions on RCBs

13.358 In our Remedies Notice, we had sought parties' views on the nature, scale and likelihood of any RCBs, and the impact of any possible remedies on any such benefits.²⁰⁵ Our assessment is based on the submissions and evidence we received from parties in relation to this question. We do not consider here potential RCBs that might be lost if we implemented a remedy option that we are not proposing to take forward, but which would be retained with our package of remedies.

13.359 In general, we received very limited evidence from parties that directly highlighted the loss of any potential RCBs arising from the implementation of the remedy options set out in our Remedies Notice. We have, however, included in our assessment a number of submissions from parties which, whilst not directly arguing the case for RCBs, may have alluded to the existence of a potential RCB that might be lost through the implementation of a particular remedy or package of remedies.

13.360 Our assessment is set out in Appendix 13.7, under the following categories of potential RCBs, based on the various parties' submissions we received:

- (a) *RCBs arising from horizontal market structure in GB cement production:* where we consider the parties' views in relation to potential RCBs arising from a GB cement producer operating a network of cement plants in GB (see Appendix 13.7, Annex A);
- (b) *RCBs arising from existing GGBS arrangements:* where we consider any potential RCBs in relation to the current arrangements concerning the supply of GGBS (see Appendix 13.7, Annex B);
- (c) *RCBs arising from vertical integration:* where we consider potential RCBs arising from vertical integration, in particular in the context of our cement plant divestiture remedy, where some RMX plant divestitures by Lafarge Tarmac may be required (see Appendix 13.7, Annex C);
- (d) *RCBs arising from transparency of market information:* where we consider potential RCBs in relation to our remedy concerning the publication of cement market data (see Appendix 13.7, Annex D); and
- (e) *RCBs arising from generic price announcement letters:* where we consider potential RCBs in relation to our remedy to improve the way the GB cement suppliers communicate their price increases to their customers (see Appendix 13.7, Annex E).

13.361 For each category of potential RCBs set out above, we first consider the views of parties before setting out our own assessment. Based on our detailed assessment in Appendix 13.7, and having considered a variety of potential RCBs, we concluded that there was no evidence to suggest that the introduction of our package of remedies would result in a material loss of RCBs. We therefore decided not to alter our package of remedies to take account of potential RCBs.

²⁰⁴ The Guidelines, paragraphs 367–369.

²⁰⁵ Remedies Notice, paragraphs 114–116.

Effectiveness of our package of remedies

13.362 Based on the assessment above, we have identified the following measures to be included within the package of remedies:

- (a) divestiture of Lafarge Tarmac's Cauldon or Tunstead plant (see Figure 13.1 and paragraphs 13.7 to 13.138);
- (b) two transparency-reduction measures comprising:
 - (i) restrictions on the publication of GB cement market data (see Figure 13.2 and paragraphs 13.139 to 13.175); and
 - (ii) a prohibition of the practice of issuing generic cement price announcement letters (see Figure 13.3 and paragraphs 13.176 to 13.209); and
- (c) divestiture of one of Hanson's GGBS plants with supporting measures to achieve an effective divestiture (see Figure 13.4 and paragraphs 13.210 to 13.352).

13.363 In our assessment of the effectiveness of this package of remedies, we consider below:

- (a) how the package of remedies addresses the AECs and/or resulting customer detriment (paragraphs 13.364 to 13.384); and
- (b) other aspects of the effectiveness of our package of remedies (paragraphs 13.385 to 13.408).

How the package of remedies addresses the AECs and/or customer detriment

13.364 We discussed the rationale for each element of the package of remedies in paragraphs 13.5 to 13.352 above. In this subsection, we set out how the elements in the package of remedies work together to remedy the AECs and the resulting customer detriment that we have found.

13.365 We consider first how the elements of the package of remedies would address the coordination AEC and the customer detriment that arises from that AEC. We then consider how the elements of the package of remedies would address the AEC in GGBS and the GGBS-related AEC in cement and the customer detriment that results from these AECs.

Addressing the coordination AEC and resulting customer detriment

13.366 The divestiture of either the Cauldon or Tunstead plant to a new entrant into cement production in GB, along with any RMX and other operations necessary to achieve an effective disposal, is at the heart of the package of remedies that we have decided to be necessary to address the coordination AEC. This divestiture would represent a tightly defined but nonetheless significant change that will have a substantial effect on the GB cement markets, creating a new fifth GB cement producer, disrupting existing patterns of behaviour and significantly reducing the ability and incentive for any group of GB cement producers to sustain a coordinated outcome in future.

13.367 This divestiture would be supported by two measures designed to reduce market transparency: restrictions on the publication of cement market data and a prohibition of the practice of issuing generic cement price announcement letters. While either of

these measures would have a relatively modest impact if introduced on its own, they reinforce the impact of structural change, by reducing the effectiveness of two of the mechanisms through which we have found coordination to be sustained. In this way, these supporting measures help deliver the break with past behaviour that we are seeking to achieve and contribute to preventing the re-establishment of coordination at a future date.

13.368 Taken together, we would expect the cement plant divestiture and the measures to reduce market transparency significantly to affect each of the three conditions necessary for coordination to be sustained and thereby disrupt the existing coordination that we have identified:

- (a) The ability of GB cement producers to reach an understanding and to monitor the terms of coordination will be significantly reduced by the creation of a fifth GB cement producer. The reduction in market transparency and increase in strategic uncertainty that would result from the divestiture would make it more difficult for the Top 3 cement producers to detect changes in each other's behaviour and anticipate the actions of the other market participants, which would now include both the new cement producer and HCM. The changes to the informational environment resulting from the two transparency-reduction measures would reinforce this effect.
- (b) The divestiture of either the Cauldon or Tunstead plant would significantly reduce Lafarge Tarmac's incentives to coordinate with other GB cement producers. The incentives on other GB cement producers to coordinate are likely to be reduced indirectly as a result of: (i) a reduction in the likelihood that deviations from coordination would be detected; (ii) changes to Lafarge Tarmac's behaviour; and (iii) an increase in the external constraint on any coordinating group.
- (c) The external sustainability of coordination would be significantly reduced. Following the divestiture, we would expect at least two GB cement producers, rather than one (ie HCM) as at present, to stand outside any coordinating group. The proportion of the market supplied by the Top 3 cement producers will be reduced and they will face competition from a wider variety of sources.

Addressing the AEC in GGBS, the GGBS-related AEC in cement and the resulting customer detriment

13.369 Our package of remedies to increase competition in the GGBS supply chain involve a divestiture of one GGBS plant by Hanson with supporting measures to ensure the effectiveness of this divestiture.

13.370 We expect that these measures will contribute to remedying the AEC in GGBS and the GGBS-related AEC in cement that we have found by addressing at source the situation in which Hanson alone has the ability to sell GB-produced GGBS and where the domestic GGBS supply chain is entirely controlled by two of the Top 3 cement providers. We expect the consequence of introducing this remedy to be a situation in which there are two competing suppliers of GGBS, one of whom is not a GB cement producer. To ensure the effectiveness of this remedy in addressing the underlying causes of these AECs, and to ensure that the remedy does not simply result in Hanson's current market power being exercised by Lafarge Tarmac one stage further up the supply chain, we have also required Lafarge Tarmac to enter into a supply agreement with the new entrant that would provide the new entrant with secure and cost-effective access to GBS.

- 13.371 We expect that the overall impact of these measures will be to put downward pressure on GGBS prices, driving them towards competitive levels. This in turn would address the distortion caused by the current operation of the GGBS supply chain in the GB cement markets and hence would also be expected to contribute to the reduction in the price of cement.
- 13.372 We would expect our measures to increase competition in the GGBS supply chain to disrupt further existing patterns of behaviour, by increasing the strength of the competitive constraint on GB cement producers from GGBS providers. Our decision to prevent any GB cement producer from acquiring the divested GGBS operations will have the effect of introducing new competitors to this neighbouring market, adding an additional element to the increase in strategic uncertainty in the GB cement markets introduced by the other remedies.
- 13.373 The impact of the interventions that we are taking forward in relation to GGBS would be reinforced by the other measures. In particular, we expect that effective remedies to address coordination in the GB cement markets are likely to put downward pressure on cement prices. This in turn would constrain the extent to which it is possible for GGBS prices to exceed competitive levels, given that at current GGBS prices, we have found cement prices to provide a 'ceiling' for GGBS prices. While we do not consider that these other measures aimed at remedying coordination in the GB cement markets would directly address the causes of the AEC in GGBS or the GGBS-related AEC in cement, or be sufficient to remove fully the customer detriment resulting from these AECs (see paragraph 13.435), they would nonetheless support the measures to increase competition in the GGBS supply chain and increase the likelihood of a comprehensive and lasting solution to these AECs (see also paragraphs 13.429 to 13.432, where we consider how the GGBS remedies contribute to addressing the coordination AEC, and whether they would be sufficient to address the coordination AEC without the need for direct structural intervention in the GB cement markets.

Conclusions on how the package of remedies addresses our concerns

- 13.374 Our package of measures contains two significant, high-impact divestitures capable of addressing the AECs that we have identified at their source along with supporting measures to safeguard and reinforce their impact. While we have identified distinct measures targeted at the causes of the coordination AEC on the one hand, and the causes of the AEC in GGBS and the GGBS-related AEC in cement on the other hand, the actions directed at addressing each of these AECs also contribute to addressing the others.
- 13.375 We considered whether this package of measures could be judged to represent a comprehensive solution to these AECs and the customer detriment that flows from them.
- 13.376 In relation to the coordination AEC, our analysis of the impact of the remedies on the conditions for coordination summarized in paragraphs 13.366 to 13.368 strongly suggested to us that, by addressing the underlying causes of coordination (including both structural and behavioural causes), the remedies would reduce the likelihood of future coordination substantially and hence would be an effective solution to this AEC. However, we also considered a number of arguments as to why, nonetheless, coordination might still remain even with these remedies in place.
- 13.377 We noted first that the package of remedies did not include specific measures to address every feature of the GB cement markets that we have found to contribute to the coordination AEC. For example, we have decided not to require the divestiture of

RMX plants, or otherwise to reduce materially the extent of vertical integration from cement into downstream RMX operations. Similarly many of the barriers to entry (eg the high costs of building a new cement plant) and some aspects of the market that enhance transparency (eg the nature of buyer–supplier relationships) are not readily capable of change.

- 13.378 We did not consider it necessary, however, to address directly every market feature that leads to the coordination AEC in order to achieve a comprehensive solution.²⁰⁶ We took the view that the structural change that we have identified, taken together with the measures to reduce certain of the more addressable aspects of market transparency complemented by the reforms to the GGBS supply chain, would be sufficient to undermine coordination and thereby generate increased competition without the need for further measures.
- 13.379 We next considered the possibility that the divestiture of one cement plant—and the creation of a single new GB cement producer—might be insufficient to undermine coordination and generate increased competition. In this context, we had regard to our finding that the divestiture of the Hope plant to MI (HCM), taken together with the creation of Lafarge Tarmac, was unlikely to be sufficiently market-disrupting to undermine the AEC.²⁰⁷
- 13.380 We acknowledged that coordination was still conceivable within a more fragmented market structure. However, we judged that the complexity of achieving effective coordination is likely to increase substantially with the number of major market participants. Unlike the situation giving rise to the entry of HCM, the divestiture that we have identified will increase the number of GB cement producers, rather than (in effect) replacing Tarmac with HCM as the fourth largest GB cement producer. Moreover, the divestiture would have the effect of removing around 1 Mt of production capacity (equivalent to around 10 per cent of market output) from the Top 3 cement producers, placing it in the hands of an independent new competitive force. By way of comparison, the net effect of the divestiture of the Hope plant and the creation of Lafarge Tarmac was the removal of around 0.5 Mt of production capacity from the Top 3 cement producers (ie around half of the impact of divesting either the Cauldon or Tunstead plant), with no change to the number of GB cement producers. In addition, to the extent that GGBS is a partial substitute for cement, placing GGBS capacity in the hands of a new independent competitor will indirectly undermine the ability and incentives of GB cement producers to coordinate to some degree. We considered that these changes to market structure, taken together with the supporting measures in our package of remedies, were sufficiently material to reduce the likelihood of coordination without the need for further divestitures.
- 13.381 Thirdly, we considered whether, by making Lafarge Tarmac more similar to Cemex and Hanson in certain dimensions (eg number of plants, market share and, under certain circumstances, the level of vertical integration), a divestiture of either the Cauldon or Tunstead plant would increase rather than reduce the likelihood of coordination. We noted that, while firms that are relatively symmetric may more easily respond to incentives to reach an understanding with each other, the current asymmetries between the Top 3 cement producers had not prevented coordination from being sustained during the period covered by our investigation. We have seen no evidence that Lafarge’s differences from the other GB cement producers, prior to the formation of Lafarge Tarmac, had caused it to compete more vigorously with them.

²⁰⁶ This is consistent with the approach taken in the Guidelines (see [paragraph 332](#)—‘the remedy that is ultimately selected need not directly address every feature identified, if for example, tackling a subset of features directly would be sufficient to generate effective competition and thereby remedy the AEC’).

²⁰⁷ Paragraphs 8.358–8.407.

We took the view that the impact of having a larger number of GB cement producers and the entry of a new competitive force was likely to outweigh any potential impact on incentives of the Top 3 cement producers to coordinate that might arise from increased symmetry in certain dimensions.

13.382 While there is inevitably some risk that any package of competition-enhancing measures might not be effective—particularly in the context of a market in which coordination has been present for a significant period of time—we concluded that our measures provide a comprehensive solution to the coordination AEC.

13.383 In relation to the AEC in GGBS and the GGBS-related AEC in cement, we took the view, based on our analysis summarized in paragraphs 13.369 to 13.373, that our measures would directly address the problems we have identified and would represent an effective solution to those AECs. This view is reinforced by our expectation that the GB cement markets will also become more competitive, as a result of the introduction of our package of remedies to the coordination AEC, increasing the competitive pressures facing GGBS providers.

13.384 We concluded that our package of remedies would represent a comprehensive solution to the three AECs we have identified by tackling their underlying causes. By so doing, we expected that the customer detriment arising from these AECs would also be addressed, as it would no longer be possible to sustain higher cement and/or GGBS prices in the more competitive environment that we expect to prevail, once our remedies are put in place.

Other aspects of the effectiveness of the package of remedies

13.385 For the reasons set out above, we have concluded that this package of remedies will be effective in targeting the underlying causes of the AECs. In evaluating the effectiveness of our package of remedies, we have considered the following further factors:²⁰⁸

- (a) the extent to which the remedy measures are capable of effective implementation, monitoring and enforcement;
- (b) the timescale over which the remedy measures will take effect;
- (c) consistency with existing and likely future laws and regulations; and
- (d) coherence as a package of remedies.

Implementation, monitoring and enforcement

13.386 In developing each of the remedy measures, we have considered how each remedy measure could best be implemented, monitored and enforced.

13.387 Our detailed consideration of how each measure could be implemented is set out in our assessment of each option. In summary, we have concluded that:

- (a) The divestiture of either the Cauldon or Tunstead plant would be implemented by means of either accepting undertakings from Lafarge Tarmac or, if necessary, making an Order requiring Lafarge Tarmac to carry out the divestiture.

²⁰⁸ See the Guidelines, paragraphs 334–341.

- (b) The restrictions on the publication of GB cement market data would be implemented by means of accepting undertakings from the MPA and introducing an Order constraining the behaviour of the GB cement producers.
- (c) A prohibition of the practice of issuing generic cement price announcement letters would most effectively be implemented by means of an Order.
- (d) The measures to increase competition in the GGBS supply chain would be implemented by means of accepting undertakings from Hanson to implement the necessary divestiture—and from Lafarge Tarmac to enter into a suitable supply agreement with the acquirer of the divested business—or, if necessary, by making an Order binding Hanson and/or Lafarge Tarmac.

13.388 Our detailed consideration of the monitoring and enforcement of each measure is set out in our assessment of each option. In summary, we have concluded that:

- (a) Divestiture of either the Cauldon or Tunstead plant—in line with our normal practice, the CC would oversee the divestiture process with the assistance of a monitoring trustee. Once an effective disposal has been achieved, we do not anticipate a need for further ongoing monitoring.
- (b) Responsibility for monitoring compliance with the restrictions on the publication of GB cement market data would fall to the OFT, or after 1 April 2014, the CMA. In our view, the terms of the obligations on the MPA and other parties are clear and capable of being effectively monitored.
- (c) Responsibility for monitoring compliance with the prohibition of the practice of issuing generic cement price announcement letters would again fall to the OFT (or the CMA after 1 April 2014). The terms of these obligations on GB cement suppliers are clear and are capable of being effectively monitored. We would also expect cement customers to report any return to the practice of sending generic price announcement letters.
- (d) The CC would oversee implementation of the divestiture of the GGBS plant, again with the assistance of a monitoring trustee. Once this disposal has been achieved, we would not anticipate a need for further ongoing monitoring.

13.389 We concluded that each of the measures was capable of effective implementation, monitoring and enforcement. Once the divestitures have been implemented, we would expect ongoing monitoring and compliance costs of the package of remedies to be very small.

- *Timescale over which the remedy measures will take effect*

13.390 In evaluating the timescale over which the remedy measures within our package of remedies are likely take effect, we considered:

- (a) the time that it is likely to take to implement the remedy measures following publication of our final report; and
- (b) the time that it is likely to take for the remedy measures, once implemented, to remedy the AECs and the resulting customer detriment.

13.391 The implementation of remedies following a CC investigation typically involves two stages. In the first stage, the CC agrees undertakings with the relevant parties or makes an Order. This includes a period of formal public consultation, as specified in

Schedule 10 to the Act. In the second stage, the parties subject to any undertakings or Order take the action required by the CC.²⁰⁹

13.392 For straightforward remedies, the CC expects to make an Order or accept undertakings within around six months of publication of its final report. The implementation of more complex remedies may take longer, though the CC expects to accept undertakings or make an Order within ten months from publication of its final report, other than in exceptional circumstances.²¹⁰ Our current view is that it is both realistic and desirable to aim to conclude this first stage of the remedy implementation process within six months of publication of this report, ie by July 2014. In any case, we do not anticipate there being any exceptional circumstances that would lead to implementation of our package of remedies taking longer than the timescales set out in our guidance.

13.393 Once undertakings have been agreed, or an Order made, the timescale for action to be taken will vary according to the remedy in question. We would expect the two transparency-reduction measures to come into force, either at the same time as the CC accepts undertakings or makes an Order, or very shortly afterwards. Our decisions in relation to the timescale for implementation of the cement plant and GGBS plant divestitures are set out in Figures 13.1 and 13.4. These would allow a period of up to [X] months for Lafarge Tarmac to implement the cement plant divestiture and up to [X] months for Hanson to implement the GGBS plant divestiture. In each case, this divestiture period would run from the date on which the CC accepts final undertakings or makes a final Order as the case may be.

13.394 We would therefore expect that implementation of all elements of our package of remedies would be achieved within [18 months to three years] of publication of this report.

13.395 Once implemented, we would expect the divestiture of either the Cauldon or Tunstead plant to have an immediate disruptive effect on coordination in the GB cement markets, as the new entrant sought to implement an independent commercial strategy and develop its customer base, and as cement customers benefited from an additional source of GB-produced cement. We would expect the positive impact of this measure to grow over time, as the new entrant developed its competitive capabilities and other GB cement producers sought to adjust their own strategies to the new, more competitive environment. We also expect the transparency-reduction measures to have an immediate effect on competitive conditions within the GB cement markets, though on their own we would expect their impact to be more modest.

13.396 We would similarly expect the measures to increase competition in the GGBS supply chain to result in an immediate change to market structure, once the GGBS plant divestiture has been implemented, and that this would rapidly change the conduct of market participants and result in better outcomes in the GGBS and cement markets. As with the other remedies, we would expect the beneficial impact of these measures to grow over time, as the new entrant into GGBS production puts in place its independent commercial strategy and develops its competitive capabilities.

13.397 Overall, we would expect our package of remedies to be in place and to have a substantial beneficial impact on competition and on market outcomes within a relatively

²⁰⁹ The action required by the CC may be a one-off action (eg to implement a divestiture) or a continuing commitment (eg to comply with a behavioural remedy).

²¹⁰ The Guidelines, [paragraph 89](#). These timescales are consistent with the statutory timescales that will apply to remedy implementation under the CMA.

short timescale (of around [18 months to three years]) following publication of this report. We would expect this beneficial impact to grow over time, such that we would expect the full benefits of increased competition to be realized within five years of publication of this report.

- *Consistency with existing and likely future laws and regulations*

13.398 As part of our consideration of the design of each of the measures in our package of remedies in paragraphs 13.5 to 13.352, we considered whether any elements of this package would be inconsistent with other relevant laws and regulations applicable to the GB cement markets or related sectors. We did not identify any such inconsistency in relation to any specific measure.

13.399 A number of parties put forward more general arguments about our ability to take action in the light of ongoing or previous earlier investigations under competition law:

(a) Lafarge Tarmac noted that in 2012, the CC required an extensive set of divestiture remedies from Lafarge and Anglo American as a condition of its approval for the creation of Lafarge Tarmac. Lafarge Tarmac submitted that to impose a further divestiture on Lafarge Tarmac now would be disproportionate, unfair, and would breach the legitimate expectations of Lafarge Tarmac's shareholders, Anglo American and Lafarge.²¹¹

(b) Lafarge Tarmac further submitted that the CC was legally required to acknowledge the limits on its power to order remedies. In this context, Lafarge Tarmac noted that the OFT had taken the step of referring this sector to the CC even though it was aware of the European Commission's ongoing investigation. Without suggesting that there had been any breach, Lafarge Tarmac submitted that, to the extent that any agreement or practice potentially fell within the scope of Article 101, the CC's powers would necessarily be subject to Article 3 of Council Regulation 1/2003 ('the Regulation').²¹² More generally, in considering the need for any remedies arising from this market investigation reference, including the proportionality of any such remedies, the CC will be cognizant of the ongoing investigation by the European Commission.²¹³

(c) Hanson submitted that the BFS and GBS agreements were fully disclosed to and visible to the European Commission at the time it assessed the merger between HeidelbergCement and Hanson. Hanson told us that the European Commission reviewed the arrangements (as recently as in 2007) and had no concerns regarding the arrangements or otherwise requiring remedial actions or any form of undertakings. Rather, the European Commission approved the relevant merger in Phase I.²¹⁴ Hanson further submitted that the European Commission merger decision gave HeidelbergCement a legitimate expectation that the interrelationship between Hanson's cement business with both RMX and GGBS did not have an anticompetitive effect. Therefore, it submitted that as there had been no material change in circumstance since this acquisition, it would be disproportionately detrimental to HeidelbergCement and Hanson to order structural remedies.²¹⁵

²¹¹ [Lafarge Tarmac response to provisional findings and Remedies Notice](#), paragraph 191c).

²¹² [Council Regulation \(EC\) No 1/2003 of 16 December 2002](#) on the implementation of the rules on competition laid down in Articles 81 and 82 (now Articles 101 and 102) of the Treaty.

²¹³ [Lafarge Tarmac response to provisional findings and Remedies Notice](#), paragraph 5.

²¹⁴ [Hanson response to provisional findings](#), paragraph 28.47.

²¹⁵ [Hanson response to Remedies Notice](#), paragraph 4.17.

(d) Hanson also stated that if the agreements were to be analysed under Article 101 (or 102) of the TFEU, the analysis would take into account the position of GGBS within the wider cementitious products sector. In this regard, Hanson stated that the limited scope for impact on the wider cementitious sector, of which it estimated GGBS production was equivalent to only around 12.5 per cent, would generally be critical to the assessment. Hanson stated that this would suggest no scope for intervention under the TFEU and that it would be perverse of the CC to intervene in the same arrangements, ostensibly applying similar principles of competition analysis.²¹⁶

13.400 In its response to the provisional decision on remedies, Hanson submitted further arguments to challenge the CC's 'jurisdiction to investigate AECs in the GBS and GGBS markets themselves ... and the power to impose contractual interference and divestment remedies in GBS/GGBS'.²¹⁷ It submitted that the CC must justify the interference with Hanson's property rights in order to strike a fair balance between the interests of addressing any 'perceived AEC' and the requirement (under section 6(1) of the Human Rights Act 1998) to protect Hanson's 'fundamental rights'. It argued that the proposed divestitures of its GGBS plants would amount to a 'serious interference' with Hanson's property rights, engaging Article 1 of the First Protocol to the European Convention on Human Rights.²¹⁸

13.401 Hanson also noted that the remedies would, if implemented, be only the second time under the Act that divestiture remedies would have been imposed in a market investigation by the CC. It argued that the previous case (BAA Airports) involved a 'successor to a state-owned enterprise, which had acquired its position through the transfer of assets from the state', and that in contrast, Hanson's position in GGBS was as a result of the 'pioneering investments' made by Hanson and its predecessor entity, Civil & Marine, and the 'free negotiation of supply agreements with other commercial trading parties'. It therefore argued that the 'bar' was higher in respect of any proposed interference in Hanson's property rights and contractual arrangements.²¹⁹

13.402 Several of the above submissions relate to the interaction between UK and EU competition law, a detailed assessment of which may be found in Appendix 13.8. Our views on each of the points raised in paragraph 13.399 above may be summarized as follows:

(a) We see no grounds for Lafarge Tarmac's submission that either it or its shareholders has any legitimate expectation that the CC would avoid imposing a divestiture on Lafarge Tarmac, as a result of its earlier decision to accept a divestiture remedy offered by Anglo American and Lafarge as a condition for allowing the Anglo American–Lafarge JV to proceed. The purpose of that divestiture remedy was to prevent a substantial lessening of competition arising as a result of the proposed JV, in particular by preventing the market from becoming more susceptible to coordination (or preventing any existing coordination becoming more effective) than absent the JV. Had Anglo American and Lafarge decided not to proceed with this divestiture, the alternative would have been the prohibition of the JV and the continuation of the pre-merger situation. The JV decision did not therefore give rise to any legitimate expectation that no further remedies would be found to be required as a result of the market investigation, as there was nothing in the merger decision to indicate that the operation of GB cement markets absent the JV was that of a well-functioning market.

²¹⁶ *ibid.*, paragraph 6.26.

²¹⁷ [Hanson response to the provisional decision on remedies](#), section 3.

²¹⁸ *ibid.*, paragraphs 4.11 & 4.12.

²¹⁹ *ibid.*, paragraph 4.14.

- (b) In relation to the ongoing European Commission investigation, the CC has been clear throughout this market investigation that it is not within its remit to apply Article 101 of the TFEU as it is not a designated competition authority for the purposes of Articles 5 and 35 of the Regulation. We do not agree that the existence of the European Commission’s investigation prohibits the CC from investigating the markets referred by the OFT, or from seeking to remedy the AECs that have been found. The CC has maintained contact with the European Commission’s case team throughout its investigation and is not aware of any real risk of conflict between the two investigations or their findings.
- (c) In the Heidelberg/Hanson merger case, the European Commission considered potential horizontal and vertical effects arising from the merger. It concluded that the merger was unlikely to raise competition concerns under any of the theories of harm assessed. We have assessed the relevance of this decision to our analysis in Section 5.²²⁰ In Appendix 13.8, paragraphs 12 to 17, we set out our reasons why we have taken the view that this European Commission merger clearance decision does not preclude the CC from making findings that the market is not competitive, nor proceeding to remedy the AECs and resulting customer detriment.
- (d) Our assessment in Appendix 13.8, paragraphs 20 to 31, sets out our reasons for taking the view that the CC would not be in breach of its Article 3(2) duty by proceeding with the remedial action in relation to the GGBS supply chain summarized in Figure 13.4.

13.403 We concluded that there was no conflict between our package of remedies, or any elements within it, and other relevant laws and regulations applicable to the GB cement markets or related sectors.

- *Coherence as a package of remedies*

13.404 We considered whether the remedy measures contained within our package of remedies were likely to be mutually reinforcing.

13.405 There are important synergies between the elements of the package of remedies. The cement plant divestiture and the transparency reduction measures in the package of remedies work together to address each of the conditions necessary for coordination to be sustained, increasing the likelihood that the package of remedies will result in the necessary change in cement market conduct and outcomes and that this change will be sustained over time. The impact of these measures is reinforced by the measures to increase competition in the GGBS supply chain, adding an additional element to the increase in strategic uncertainty in the GB cement markets introduced by the other remedies.

13.406 More generally, the interrelationships between the operation of the GGBS and cement markets mean that measures that are primarily directed at addressing the coordination AEC will also support measures that primarily address the AEC in GGBS and the GGBS-related AEC in cement and vice versa. We did not identify any ways in which the objectives of the various elements of the package of remedies could come into conflict.

13.407 We therefore concluded that this represents a coherent package of remedies, whose elements are mutually reinforcing.

²²⁰ Paragraphs 5.91–5.93, and Appendix 5.3, paragraphs 34–38.

Conclusions on the effectiveness of the package of remedies

13.408 We concluded that the package of remedies represents a comprehensive and effective solution to the coordination AEC, the AEC in GGBS and the GGBS-related AEC in cement.

Proportionality of our package of remedies

13.409 Many of the matters that we have discussed in paragraphs 13.362 to 13.408 relating to the effectiveness of our remedy measures, and our consideration in Appendix 13.6 of alternative remedy measures, relate directly to the issue of proportionality.

13.410 In paragraphs 13.422 to 13.495, we state four key questions, and our approach to them, that have heavily influenced our approach to remedies. However, in addition to the detailed analysis in those paragraphs, a number of broader considerations have had a pervasive influence on our choice of remedy measures and on our thinking about proportionality.

Broader considerations concerning the proportionality of our package of remedies

13.411 We fully acknowledge that some of the measures that we are taking forward—namely the divestiture of either the Caudon or Tunstead plant, and the measures necessary to increase competition in the GGBS supply chain—are substantial interventions in the operation of these markets and will involve significant disruption to the parties from whom divestitures are sought. In this context, we noted the submissions made by Hanson in paragraphs 13.400 and 13.401 and similar submissions made by Lafarge Tarmac in response to the provisional decision on remedies.

13.412 We considered whether such measures were so onerous that they were inherently disproportionate. We took the view that, where necessary to address a serious competition problem, divestiture remedies can be justified as an outcome of a market investigation and both the Act and the CC's guidance clearly contemplate this possibility. Having decided to include these remedies in our final report, and in line with our usual practice, we will seek to design and implement the divestiture process in such a way as to give the divesting parties the opportunity to earn a fair market value.

13.413 We also gave careful consideration to Lafarge Tarmac's submission that the CC should not penalize one undertaking more than its rivals and, in particular, that a cement plant divestiture remedy targeted at Lafarge Tarmac would have a disproportionate impact on Lafarge Tarmac compared with its rivals.²²¹ In this context, we similarly considered whether the measures to increase competition in the GGBS supply chain would have a disproportionate impact on Hanson.

13.414 Our duties under the Act require us to remedy the AECs and/or resulting customer detriment. It is not the purpose of the market investigation regime or of this investigation to penalize or punish any party. Rather, our aim is to resolve the competition problems that we have identified in the GB cement markets by identifying effective and proportionate solutions to these problems. Against that background, the extent to which our package of measures has a differential impact on the various market participants is determined principally by our fact-based consideration of the specification of the measures contained within it:

²²¹ [Lafarge Tarmac response to Remedies Notice](#), paragraph 191(a).

- (a) Our detailed consideration of the cement plant divestiture remedy is in paragraphs 13.7 to 13.138, where we considered divestiture of each of the ten GB cement plants as a possible basis for this remedy. Having done this, we identified two plants, both belonging to Lafarge Tarmac, which could form the basis of an effective cement plant divestiture remedy. Divestiture of any of the other GB cement plants—including the plants owned by Hanson, Cemex and HCM as well as the other two plants owned by Lafarge Tarmac—would not be similarly effective in addressing the coordination AEC and/or would be significantly more onerous in terms of the impact on the divesting party's competitive capabilities and ability to compete robustly post-divestiture. Divestiture of these other plants has therefore not been pursued.
- (b) We have decided that the transparency-reduction measures should apply in the same way to all GB cement producers, and in the case of the prohibition on generic price announcement letters to all GB suppliers of cementitious products.
- (c) It is inevitable that remedies to increase competition in the GGBS supply chain will have a greater impact on Hanson than on other GB cement producers, as only Hanson is active in the supply of GGBS produced within GB. Having considered a range of remedy options, we decided that only a remedy involving a divestiture of a GGBS plant would be effective, which would necessarily involve a divestiture by Hanson, as it owns all such plants in GB.

13.415 The differential impact of our package of remedies on the four GB cement producers is therefore a direct and unavoidable consequence of our overriding duty to remedy the AECs and of the specific circumstances facing us in seeking to carry out this duty. Nor do we consider it unfair or distortionary for Lafarge Tarmac and Hanson to be required to implement additional measures compared with the other GB cement producers. In this context we note that, as the largest GB cement producer, Lafarge Tarmac (and previously Lafarge) is the main beneficiary from coordination within the GB cement markets. Similarly, Cemex and HCM are not present in the GGBS supply chain and hence do not benefit directly from the shortcomings of competition in the GGBS supply chain which we are seeking to address. Furthermore, for the reasons summarized in paragraphs 13.459, 13.484 and 13.485, we would expect Lafarge Tarmac and Hanson to be in a position to achieve a fair value for any divestitures they would be required to make.

13.416 We therefore judged that it would not be inherently disproportionate to require the divestiture of either the Cauldon or Tunstead plant, nor to implement the measures to increase competition in the GGBS supply chain. Such steps are not to be taken lightly, however, and in considering whether to take forward these remedies, we gave careful consideration to the significance of the competition problems that we have identified, the extent to which they were likely to be 'self-correcting' absent effective intervention, and the extent to which they might be addressed by other, less interventionist remedies.

13.417 Based on our competitive assessment as set out in Section 8, it is our view that the shortcomings that we have identified in the operation of the GB cement markets are substantial:

- (a) Vigorous rivalry between firms competing independently with one another to win customers' business is at the heart of the competitive process. The substantial body of evidence that we have collected in this investigation clearly indicates that this process has been badly distorted in the GB cement markets, with the three largest producers taking a 'live and let live' approach, coordinating with their rivals rather than seeking to expand their own businesses or to offer better value to

their customers. These shortcomings have enabled the GB cement industry to earn profits above their cost of capital during a severe economic downturn (see Appendix 7.7). This level of profitability was sustained on average throughout the six-year period we have considered and was greater during the second half of this period.

- (b) The problems that we have identified as arising in the GGBS supply chain and their effects on the GB cement markets are also significant. The interaction of supplier conduct and other structural factors has led to a situation in which the supply chain is controlled by two of the Top 3 cement producers, with one provider holding an effective monopoly over the provision of GGBS, itself an important substitute for cement. Our analysis of GGBS profitability at Appendix 7.16 indicates that there has been substantial overcharging for this product.

13.418 The evidence indicates that the serious problems that we have identified have been present for at least the whole period over which we have collected detailed evidence, although the extent of coordination and the harm arising from it has varied over time.

13.419 We also consider that these problems are likely to persist absent effective intervention to address their underlying causes. Barriers to entry and expansion in the cement and GGBS markets are high, such that we cannot expect de novo entry, or expansion by smaller players, to undermine coordination in cement or lead to greater competition to supply GGBS over time, as might occur in other markets. These market characteristics also significantly constrain the scope for other forms of remedy—for example, effective market-opening measures are particularly difficult to identify and implement in the presence of high intrinsic barriers to entry.

13.420 Lafarge Tarmac told us in its response to the provisional decision on remedies that we had not considered the evidence as to the ‘state of the market’ in the first eight months of 2013. It argued that since HCM entered the market, there were substantial levels of customer switching in 2013, and that over the first five months of 2013, Lafarge Tarmac had lost around [redacted] kt of bulk independent business, with [redacted] per cent of these losses being to HCM, compared with [redacted] kt during the whole of 2011.²²²

13.421 We have paid close attention to the most recent market developments, in particular the creation of HCM and Lafarge Tarmac in January 2013 and the acquisition by CRH of various import facilities in the first half of the same year. We have seen no evidence to suggest that HCM, like Tarmac before it, is doing anything other than pursuing an independent competitive strategy. However, for the reasons set out in paragraphs 8.358 to 8.407, it is our view that HCM’s entry into the GB cement markets—which was accompanied by the exit of Tarmac as an independent competitive force, thus resulting in no change to the number of GB cement producers—is insufficient by itself, or in combination with other recent developments, to disrupt long-established patterns of behaviour. We have seen nothing to suggest that Lafarge Tarmac will operate significantly differently from Lafarge or to suggest that the recent acquisitions by CRH will result in importers collectively or individually offering a significantly greater constraint on GB cement producers than in the past.

²²² [Lafarge Tarmac response to the provisional decision on remedies](#), paragraph 29(c) & (d).

Detailed assessment of the proportionality of our package of remedies

13.422 Against this background, we evaluated whether our package of remedies would be a proportionate response to the problems we have found by considering the following key questions:²²³

- (a) Is the package of remedies effective in achieving its aim?
- (b) Is the package of remedies no more onerous than necessary to achieve its aim?
- (c) Is the package of remedies the least onerous if there is a choice?
- (d) Does the package of remedies produce adverse effects which are disproportionate to the aim?

Effective in achieving its aim

13.423 For the reasons set out in paragraphs 13.362 to 13.408, we concluded that our package of remedies would be effective in its legitimate aim of remedying the coordination AEC and the GGBS-related AEC in cement, and the AEC in GGBS and the customer detriment that results from them.

No more onerous than necessary

13.424 In assessing whether the package of remedies is no more onerous than necessary, we considered:

- (a) whether each measure within the package of remedies is required to remedy the AECs that we have found; and
 - (b) whether the design of each remedy measure within the package of remedies is no more onerous than it needs to be.
- *Is each element of the package of remedies needed to achieve a comprehensive solution?*

13.425 We considered whether it would be possible to achieve a comprehensive solution to the AECs without implementing all of the measures in our package of remedies.

13.426 We considered first, as had been suggested by Cemex, whether the two measures to reduce transparency in our package of remedies would be sufficient, either on their own or in combination with other measures to remedy the AECs.²²⁴ In its response to the provisional decision on remedies, Cemex told us that it was 'clear that the model of coordination outlined by the CC, both in terms of reference of coordination as the ability to monitor the terms of coordination' were 'dependent on the ability of each GB cement producer to calculate its share of GB cement sales', and that the 'key element of transparency which allows GB cement producers to calculate their own share of GB cement sales is the MPA data'. It argued that the CC had not outlined a model of coordination that could be reached, implemented and monitored in the GB cement markets in the absence of this MPA data.²²⁵ Cemex told us that notwithstanding its disagreement with our provisional AEC findings, if the CC maintained its AEC

²²³ The Guidelines, [paragraph 344](#).

²²⁴ [Cemex response to Remedies Notice](#), paragraph 2.5.

²²⁵ [Cemex response to the provisional decision on remedies](#), paragraphs 3.11, 3.14 & 3.15.

finding in the GB cement markets, it considered that the two proposed ‘transparency reduction’ remedy measures (in particular, the remedy concerning the publication of MPA data) would be adequate to remedy the AEC identified and that the proposed divestiture remedies were ‘unnecessary and disproportionate’.²²⁶

13.427 Notwithstanding its disagreement with our provisional AEC findings, Lafarge Tarmac told us that there were ‘less intrusive remedies’, namely the two transparency-reduction measures and the GGBS remedies, which would ‘effectively address the CC’s apparent concerns’ whilst ‘allowing the market to continue to develop organically’.²²⁷

13.428 We did not expect that the two transparency-reduction measures would be a sufficient solution to the AECs for a number of reasons:

- (a) The aspects of market transparency that we have been able to address through our package of remedies are not the only aspects of transparency that facilitate coordination. In paragraphs 8.206 to 8.208, we identified a number of other important aspects of market transparency that facilitated coordination relating to: intrinsic characteristics of the market (eg the nature of customer–supplier relationships); the structure of the market (eg that it is easier to detect changes in rivals’ behaviour if there are fewer rivals); or to aspects that cannot effectively be addressed for legal and/or practical reasons (eg the publication of emissions data under the ETS). Given this, while we consider that there is a benefit in reducing some aspects of market transparency, where this is achievable and at reasonable cost, it is not practicable to eliminate transparency to the extent necessary to undermine the coordination that we have found without additional, structural, measures.
- (b) Coordination within the GB cement markets has manifested itself in a particular way, which we have described in Section 8. However, given the structural susceptibility of the market to coordination, there is a strong risk that coordination would re-establish itself, even if certain market information were no longer available to GB cement producers.
- (c) Such a remedy would not address our concerns in relation to the GGBS supply chain directly and would rely on an indirect effect via cement prices. Given that the impact of these measures, if introduced without the other elements of the package, on the coordination AEC would be limited, such an indirect effect is very unlikely to be sufficient to address the AEC in GGBS and the GGBS-related AEC in cement.

13.429 We next considered, as suggested by Lafarge Tarmac,²²⁸ whether a combination of the measures to increase competition in the GGBS supply chain with transparency-reduction measures would be sufficient to remedy the AECs without any need for divestiture of a cement plant.

13.430 For the reasons set out in paragraph 13.226, we took the view that the measures to increase competition in the GGBS supply chain would put downward pressure on GGBS prices and thereby help to address the GGBS-related AEC in cement, as well as addressing the AEC in GGBS. This could also put some downward pressure on cement prices, given that GGBS is also a partial substitute for cement.

²²⁶ *ibid*, paragraph 3.1.

²²⁷ Lafarge Tarmac response to the provisional decision on remedies, paragraph 111.

²²⁸ Lafarge Tarmac response to provisional findings and Remedies Notice, paragraphs 193 & 194.

- 13.431 In its response to the provisional decision on remedies, Hanson told us that the proposition that the GGBS remedies would have an impact on cement prices relied on the assumption that there was significant spare capacity in the GGBS supply chain, since it would otherwise be ‘unrealistic to suggest that a reduction in prices of GGBS, which currently represents (and could at most represent) a mere 10% of the cementitious products market, could have a material impact on cement prices’. It added that in making this assumption, the CC must either rely on the availability of the very significant stockpiles of GBS suggested to it by Lafarge Tarmac and/or significant spare capacity for GGBS production in the GBS supply chain.²²⁹
- 13.432 While we considered that there was scope for expansion in GGBS supply as a result of our GGBS remedies (see paragraph 13.233), we were not persuaded that an effective intervention to open up the GGBS supply chain to more competition, while necessary and desirable, would be sufficient to undermine the sustained problems that we have observed as arising from coordination in the GB cement markets. In this context, we noted that the GGBS market is significantly smaller than the GB cement markets and that GGBS is only a partial substitute for cement, and we therefore concluded that the impact of a new GGBS producer on competition in cement was likely to be significantly less disruptive than having a new GB cement producer. Given this, we judged that there was a high risk that coordination would remain in the cement market unless we intervened directly in the structure of that market.
- 13.433 We took the view, for the reasons set out in paragraphs 13.366 to 13.368, that divestiture of either the Cauldon or Tunstead plant, when combined with the two measures to reduce transparency, would significantly affect each of the three conditions necessary for coordination to be sustained. However, we also took the view, as set out in paragraph 13.372, that the creation of one new GGBS producer would add a further element of strategic uncertainty to the GB cement markets and hence increase our confidence that the GB cement markets would no longer exhibit the adverse effects of coordination, and that these effects would not recur at a later date.
- 13.434 Finally, we considered whether a combination of a cement plant divestiture and the transparency-reduction measures would be sufficient to remedy the AECs without any interventions in the GGBS supply chain.
- 13.435 We considered that measures that reduced the extent of coordination in the GB cement markets could also be expected to mitigate the AEC in GGBS and the GGBS-related AEC in cement, in that the downward pressure on cement prices that would result from more competitive cement markets would, in turn, constrain Hanson’s ability to exercise market power in GGBS. However, our view of the extent to which GGBS prices are currently above competitive levels (on a price per tonne basis) suggested to us that a lowering of the price ‘ceiling’ represented by the price of ‘pure’ cement (ie CEM I), resulting from reduced coordination, would be insufficient to address fully the AECs resulting from Hanson’s market position in GGBS, and that specific action in the GGBS supply chain would be necessary to achieve a comprehensive solution to these AECs.
- 13.436 We concluded that all of the measures in our package of remedies were necessary to achieve a comprehensive solution to the three AECs we have identified.

²²⁹ [Hanson response to the provisional decision on remedies](#), paragraph 5.27.

- *Is the design of each remedy measure within the package of remedies no more onerous than it needs to be?*

13.437 Our consideration of the design and implementation of each of the measures is set out in paragraphs 13.5 to 13.352.

13.438 In reaching our final decisions on remedy design, we have sought to avoid imposing costs and restrictions on parties that go beyond what is needed to achieve an effective remedy. For example, we have sought to avoid unnecessary restrictions on the specification of the divestiture packages for cement and GGBS plants and have given the divesting party a choice of which plants to divest, where this can be achieved without compromising effectiveness. Likewise, since the publication of the provisional decision on remedies, we have revised our view on the GGBS remedies and have decided that it is possible to reduce the number of GGBS plant divestitures required by Hanson, and to impose a less onerous remedy on Lafarge Tarmac, without compromising the overall effectiveness of the remedy. We have sought to strike a similar balance in terms of remedy implementation, for example in determining the period over which a divestiture might be achieved.

13.439 In this way, we have ensured that no measure within the package of remedies is more onerous than it needs to be, in order to address the AECs.

13.440 Given our conclusions in paragraphs 13.436 and 13.439, we concluded that our package of remedies was no more onerous than necessary in order to remedy the AECs and resulting customer detriment.

- *Least onerous if there is a choice*

13.441 If the CC is choosing between two remedy measures which appear to be equally effective, it should choose the remedy measure that imposes the least cost or is least restrictive.

13.442 In addition to the measures included in our package of remedies, we also considered a variety of other possible ways of addressing the AECs and/or customer detriment. These included measures that we had put forward ourselves for consideration and measures that were put to us by parties in response to the Remedies Notice.

13.443 Our consideration of these alternative measures is set out in paragraphs 13.353 to 13.354 and Appendix 13.6. We found that each of these alternative measures was of limited effectiveness and/or was not needed to remedy the AEC, if the measures in our package of remedies were pursued. We were not able to identify an alternative package of measures that would be both less onerous and effective in remedying the AECs. However, we took care to avoid including measures in our package of remedies that did not make a material contribution to remedying the AECs.

13.444 We concluded that, to the limited extent that we have a choice between effective remedies, we have identified the package of remedies that imposes the least cost and is least restrictive.

- *Does not produce disadvantages which are disproportionate to the aim*

13.445 We considered whether our package of remedies, or any specific measure within it, was likely to produce disadvantages which were disproportionate to the aim of remedying the AECs and/or the customer detriment resulting from them.

13.446 In reaching a judgement about whether to proceed with a particular remedy, the CC will consider its potential effects—both positive and negative—on those persons most likely to be affected by it. The CC will pay particular regard to the impact of remedies on customers. The CC will also have regard to the impact of remedies on those businesses subject to them and on other affected parties, such as other businesses (eg potential entrants, or firms active in upstream or downstream markets), government and regulatory bodies, the OFT and other monitoring agencies.²³⁰

- *Cement plant divestiture and transparency-reduction measures*

13.447 We consider first those measures which have the primary aim of remedying the coordination AEC (ie the divestiture of either the Cauldon or Tunstead plant, and the two transparency-reduction measures).

- *Benefits of the remedies*

13.448 We expect that these measures will address several of the underlying causes of the coordination AEC (see paragraphs 13.366 to 13.368) and that, in combination with the measures to increase competition in the GGBS supply chain, will provide a comprehensive solution to the AECs (see paragraphs 13.374 to 13.384).

13.449 By addressing several key underlying causes of coordination, we would expect these measures to benefit cement customers—including both direct customers (such as concrete producers) and customers further down the supply chain—making a substantial contribution towards eradicating the customer detriment of high cement prices resulting from the coordination AEC.

13.450 Our assessment of the profitability of GB cement producers is set out in Appendix 7.7. This analysis indicates that over the period 2007 to 2012, the GB cement producers earned returns in excess of the cost of capital equivalent to approximately £30 million on average each year. This analysis provides an indication of the extent of customer detriment that has been experienced during the whole of the period over which we have collected our evidence.

13.451 However, we consider that this estimate of customer detriment substantially underestimates the harm to customers that would be avoided by the introduction of effective measures to remedy the coordination AEC. The period that we have investigated includes a very severe and prolonged economic downturn. When construction demand and the wider economy recovers, we would expect cement prices to rise and the profitability of GB cement producers to increase, given the competitive shortcomings that we have identified in this sector. In this context, we noted that the extent of excess profits during the latter half of the period was significantly higher than during the first three years in the period. We also noted that the application of a cost-based estimate of customer detriment, which uses a methodology that is less heavily impacted by the economic cycle than profitability analysis, generated a higher estimate of customer detriment, in the region of £92 million in 2011 (see Appendix 8.6).

13.452 We took the view that the extent of annual customer benefits that could result from the implementation of effective measures to address the coordination AEC was likely to lie above the average estimate generated by our profitability analysis over the period 2007 to 2012. We also noted that measures to address coordination in the GB

²³⁰ The Guidelines, [paragraph 348](#).

cement markets would reinforce the impact on the GGBS-related AEC in cement and the AEC in GGBS. Given this, we considered that a figure of £30 million a year (see paragraph 13.450) would represent a very conservative estimate of the potential benefits associated with implementing the divestiture of Lafarge Tarmac's Cauldon or Tunstead plant and the two transparency-reduction measures. We therefore also had regard to scenarios where the annual benefit of introducing such remedies was in the region of £45 million and £60 million to reflect the likelihood that the benefits of introducing these measures would be significantly higher in a period of economic growth.²³¹

13.453 We do not expect the coordination AEC to be self-correcting (see paragraphs 13.416 to 13.419) and we would expect the beneficial impact of the cement plant divestiture and the transparency-reduction measures to be sustained for at least the expected timescale over which the divested plant would remain operational. This is because we expect that the creation of a new fifth cement producer would irreversibly alter the competitive dynamics of the GB cement markets and that the other measures would help sustain this more competitive environment. This suggested that the benefits of effective intervention would endure and that we should consider benefits and costs of these measures over a period of at least 20 to 30 years.

13.454 Given the timescale over which we expect these measures to come into force and to deliver benefits,²³² we sought to estimate the present value of such benefits. For example, taking a very conservative estimate of annual benefits of £30 million (see paragraph 13.452) and a discount rate (in real terms) of 3.5 per cent generates a present value of benefits of around £144 million over a 10-year period, £328 million over a 20-year period and around £457 million over a 30-year period. Using the same discount rate and assumptions about the timescale over which the remedies come into force and deliver benefits, annual benefits of £45 million would generate a present value of around £217 million over a 10-year period, £491 million over a 20-year period and around £686 million over a 30-year period. We also considered the case where the annual benefits were of £60 million. In this instance, and making the same assumptions about the discount rate and the timing with which the benefits are realized, the present value of the benefit generated would be £289 million over a 10-year period, £655 million over a 20-year period, and £915 million over a 30-year period.

o *Costs of the remedies*

13.455 Our consideration of the costs of our package of remedies is set out in Appendix 13.9.

13.456 In considering the costs associated with the divestiture of either the Cauldon or Tunstead plant, we distinguished between the one-off costs associated with implementing the divestiture and any ongoing costs or distortions that may recur once the divestiture has been put in place.

²³¹ See Appendix 13.10. If the sector moves towards recovery, we consider it reasonable to examine scenarios where the GB cement producers enjoy profit levels that are at least 10 per cent higher than the average earned over 2007–2012. On the basis of the average value of net assets from 2007 to 2012, this would imply a ROCE of around 13.7 per cent, or 3.7 per cent over our estimated cost of capital; this level of ROCE is within the levels observed in the industry over the last three years. The extent of excess profit associated with this level of returns would be around £45 million. If the producers were to enjoy profit levels that are 20 per cent higher than the average over 2007 to 2012, then the associated level of excess profit would be £59.4 million per year. We noted that a level of excess profit of around £60 million is close to the average excess profit of the cement producers over 2010 to 2012, the last three years covered by our profitability analysis (see Appendix 8.6, Table 1).

²³² See Appendix 13.10 for a description of our assumptions about the timescale over which benefits come into force and deliver benefits.

- 13.457 We asked Lafarge Tarmac about the costs that its parent companies had incurred when divesting the Hope plant along with a package of other operations (the Hope divestiture package) in January 2013. We considered that this evidence would provide some insight into consideration of the one-off costs of further divestitures.
- 13.458 The one-off costs put forward by Lafarge Tarmac relate principally to: (a) the costs of separating the business and of reconfiguring the remaining network of cement plants; and (b) the costs of effecting the transaction (eg cost of diverted management, and investment bank and legal fees). Lafarge Tarmac submitted that it was difficult to put down an estimate for all the relevant costs, though it gave us an indication that around [§] full-time equivalent staff had been involved in the sale and in overseeing the divestiture of the Hope divestiture package, that investment bank fees were around 3 to 5 per cent of sale value and that it had spent around £[§] million in creating an IT system for HCM at the time of the divestiture of the Hope divestiture package.
- 13.459 We considered submissions by Lafarge Tarmac that it would face the risk that it would not be able to realize a fair value for any divested business and that this should be taken into account in our assessment of proportionality. We saw no reason why Lafarge Tarmac would not be able to secure a fair value for any operations it was required to divest. It would have a reasonable period of time in which to achieve a divestiture and we would expect a number of bidders to come forward, in light of the relatively uncommon opportunity to enter the GB cement markets as a domestic producer. Such bidders might be cement producers active in other cement markets, or might (like MI in the case of its acquisition of the Hope divestiture package) come from another sector. While the cement market appears to be at around the bottom of the economic cycle, we would expect bidders to take a forward-looking view of demand and note that trading conditions may have improved significantly by the time any divestiture takes place.
- 13.460 Based on the evidence summarized above and reviewed in Appendix 13.9, we concluded that the one-off costs of divesting the Cauldon or Tunstead plant could be in the region of £10–£20 million.
- 13.461 We next considered whether there would be any ongoing costs associated with the divestiture of either the Cauldon or Tunstead plant. Unlike a behavioural remedy, we would not expect there to be any material ongoing costs of monitoring or enforcing this measure.
- 13.462 However, Lafarge Tarmac submitted that, if it were required to divest one of its cement plants, there would be some ongoing costs to Lafarge Tarmac associated with reduced efficiency of its network operation. These related to the additional costs of purchasing distribution services, raw materials and other inputs that would be associated with the loss of purchasing power by Lafarge Tarmac as a result of operating a smaller network of plants. Lafarge Tarmac estimated these costs at around £[§] million a year. Lafarge Tarmac also told us that, following divestiture, it estimated the selling, general and administrative expenses (SG&A) of the remaining network would increase by £[§] million a year. It gave no support for the figure and it is not clear to us how such an additional ongoing cost could be incurred following divestiture of part of the business.
- 13.463 Lafarge Tarmac told us that the divestiture would also curtail the opportunity for efficiency savings to be achieved at the divested plant, as it would not be able to benefit from the management and technical expertise of Lafarge Tarmac's network. It estimated the loss associated with these forgone efficiency savings at around £[§] million a year, based on the savings it expected to achieve at the Tunstead plant following various reviews carried out after the integration of that plant into

Lafarge Tarmac's network. We are not persuaded that the ability to implement efficiency savings at a cement plant would be jeopardized if it were divested from Lafarge Tarmac. This is because the technical and management expertise needed to identify and implement efficiency improvements are available to other parties, either in-house or brought in from outside.

13.464 Lafarge Tarmac also told us that compared with its current costs, a purchaser of a divested cement plant would incur a further £[X] million a year to operate the divested plant. Lafarge Tarmac broke this cost down into the additional costs of SG&A, additional logistics contracts, raw materials and other inputs and costs of establishing a laboratory facility, though it did not provide any evidence to support these figures. We consider that the materiality of these additional costs will depend on the identity of the purchaser. We also expect that the purchaser of the divested plant will be equally focused on running the plant as efficiently as possible, in the more competitive environment that we expect to result from our remedies. For these reasons, we took the view that the figure provided by Lafarge Tarmac significantly overestimated the extent of any additional costs that would be incurred by the purchaser of a divested plant.

13.465 Based on our assessment of the above evidence and in light of our consideration of its quality and relevance, we concluded that any ongoing costs associated with divesting either the Cauldon or Tunstead plant were unlikely to exceed around £5 million per year.

13.466 Our consideration of the costs of the two transparency-reduction measures is in Appendix 13.9, paragraphs 60 to 76. We saw no evidence to suggest that either the upfront or the ongoing costs of these two measures would be material either in overall terms or relative to the beneficial effects of introducing these measures, as part of our package of remedies.

- *Balance of benefits and costs*

13.467 Having evaluated the potential benefits and costs of these measures, we considered whether their potential costs were likely to outweigh the beneficial effects that would flow from their contribution towards addressing the AECs.

13.468 To inform our assessment of this issue, we considered whether introducing these measures would be expected to generate a positive net present value (NPV), based on reasonable assumptions about the magnitude of these effects, the timescale over which they took effect, their duration and the rate at which future effects were discounted. This analysis may be found in Appendix 13.10.

13.469 This analysis suggests that, based on a conservative estimate of annual benefits of £30 million and based on ongoing costs of separation of £5 million and one-off costs of £10 million, the divestiture of either the Cauldon or Tunstead plant, combined with the introduction of the two transparency-reduction measures, could be expected to generate a positive NPV of: £101 million over 10 years; £254 million over 20 years; and £362 million over 30 years. We estimated NPVs under a variety of other scenarios by reference to plausible variations around this base case. If we took our estimate of annual benefits to be £45 million, these measures could be expected to generate a positive NPV of £174 million over 10 years; £418 million over 20 years; and £591 million over 30 years. If we took our estimate of annual benefit to be £60 million, these measures could be expected to generate a positive net benefit NPV of £246 million over 10 years, £582 million over 20 years and £819 million over 30 years. Each of the above figures would be lower by around £10 million if we were to base our estimate on the one-off costs of the divestiture being £20 million, which is at the

upper end of the range of what we consider the one-off costs are likely to be. The NPV of the net benefits of introducing these measures was both positive and substantial in all of the scenarios we considered.

13.470 In light of this analysis and our overall appreciation of the impact of these measures, we concluded that, over the timescale for which we expect these measures to be effective, the beneficial effects of introducing these measures are likely to outweigh their costs significantly.

- *Measures to increase competition in the GGBS supply chain*

13.471 We next considered the potential effects of those measures on our package of remedies which have the primary aim of increasing competition in the GGBS supply chain.

- *Benefits of the remedies*

13.472 We expect these measures to address the key underlying causes of the AEC in GGBS and the GGBS-related AEC in cement, and that, in combination with the other measures in our package of remedies, they will provide a comprehensive solution to the three AECs we have identified (see paragraphs 13.374 to 13.384). In so doing, we expect these measures to benefit cement customers by making a substantial contribution towards eradicating the customer detriment of higher cement and GGBS prices resulting from the AECs.

13.473 To quantify the extent of the distortions arising in the GGBS supply chain, we conducted an assessment of the profitability of GBS and GGBS. This assessment is set out in Appendices 7.16 and 7.17.

13.474 Based on this analysis, our view is that the extent of overcharging for GGBS over the six years from 2007 to 2012 has been of the order of £15–£20 million on average per year. We expect high GGBS prices to feed through into high cement prices through substitution effects (because GGBS is a partial substitute to cement) and component effects (because GGBS is used as a component of pre-blended cements (in particular, CEM III) and can also be blended with pure cement (CEM I) at downstream RMX/concrete product production sites).

13.475 As set out in paragraph 8.492, we consider our estimate of overcharging for GGBS to be a reasonable approximation of the average annual detriment associated with high GGBS prices over a full business cycle. However, we also note that, while we expect the remedy to be effective in generating increased competition to supply GGBS, there are some practical limitations on our ability to develop GGBS remedies which may, under certain scenarios, constrain the extent to which our remedies are capable of eradicating all of the overcharging we have observed (see paragraphs 13.228 to 13.235).

13.476 We therefore took our estimate of overcharging for GGBS to represent a base-case indication of the extent of the potential benefits to GGBS and cement customers of increasing competition in the GGBS supply chain, and considered variations around this base case. We also noted that measures to increase competition in the GGBS supply chain would reinforce the impact of the other measures in our package of remedies, further reducing the likelihood that coordination could be sustained in the GB cement markets following implementation of our package of remedies.

13.477 We do not expect the AEC in GGBS or the GGBS-related AEC in cement to be self-correcting (see paragraph 13.419). We would expect these adverse effects to endure at least until the end of the current contractual arrangements in 2029. Given the extent of Hanson's incumbency advantages in GGBS and the possibility of extending these arrangements, the scope for such adverse effects could easily endure beyond 2029, absent effective intervention. We would also expect the beneficial impact of measures to increase competition in the GGBS supply chain to be sustained, given that these measures result in a fundamental change to the operation of this market, bringing an element of rivalry to the GGBS supply chain that is currently absent. This suggested that the benefits of effective intervention would endure until at least 2029 and that we should consider the benefits and costs of these measures over a similar period of at least 15 years.

13.478 Given the timescale over which we expect these measures to deliver benefits, we sought to estimate the present value of such benefits. For example, taking an estimate of annual benefits of £15–£20 million and a discount rate (in real terms) of 3.5 per cent generates a present value of benefits of around £179–£238 million over a 15-year period. Using the same discount rate, annual benefits of £15–£20 million would generate a present value of £129–£172 million over a 10-year period, £221–£294 million over a 20-year period and £286–£381 million over a 30-year period.

- *Costs of the remedies*

13.479 Our consideration of the costs of our package of remedies is set out in Appendix 13.9. This represents our understanding of the costs associated with each of the remedies within this package of remedies.

13.480 In considering the costs associated with the measures to open up the GGBS supply chain to greater competition, we distinguished between the one-off costs associated with implementing the remedies and any ongoing costs or distortions that may recur once the divestiture has been put in place.

13.481 In terms of one-off costs, we would expect Hanson to incur some costs associated with separating out the divested operations from the rest of its business. While there are likely to be some elements of complexity associated with the separation process, for example as regards novating, mirroring or replicating the relevant GBS supply agreements for the new entrant and consequential amendments to all three GBS agreements to give effect to our remedy, our understanding is that the extent of integration between Hanson's individual GGBS sites is relatively limited. This is likely to limit the extent of separation costs. Hanson told us that if the GGBS plant to be divested were Scunthorpe, [redacted].

13.482 Overall, we would not expect the one-off costs associated with implementing this remedy to be in excess of £10 million.

13.483 We considered submissions by Hanson that it would not be able to realize a fair value for any divested business and that this should be taken into account in our assessment of proportionality.

13.484 We thought that it was possible that Hanson might receive less for the divested operations than it paid for them on acquiring the Civil & Marine business in 2006, because the divested businesses would have to compete in a more competitive environment than that which prevailed when Hanson made its acquisition. We did not consider

that this was a relevant cost for our assessment, as the creation of such an environment was a necessary consequence and benefit of our remedy.²³³

13.485 We saw no reason why Hanson would not be able to secure a fair value for the GGBS plant it would be required to divest, given that it would have a reasonable period of time in which to achieve its divestiture. While we have decided that none of the GB cement producers should be permitted to acquire the divested GGBS plant, we would expect a sufficient number of bidders to come forward, given the opportunities presented by such a divestiture. Such bidders might include steel producers, cement producers active in other geographic markets or GB aggregates or concrete producers, or come from outside the construction sector.

13.486 We next considered whether there would be any ongoing costs associated with these measures. Unlike a behavioural remedy, we would not expect there to be any material ongoing costs of monitoring or enforcing this measure.

13.487 However, various parties submitted arguments that there would be significant ongoing costs or reductions in efficiency associated with these measures. Our consideration of these submissions is in Appendix 13.9.

13.488 In particular, Hanson submitted that there were significant benefits associated with its current exclusive ability to supply GB-produced GGBS, its ability to meet demand for GGBS from any of the plants that it currently operated and its ability to manage the quality of the product that requires significant levels of management due to the varying quality of the raw materials. We were not persuaded by these submissions, and considered that the potential benefits to GGBS customers of security of supply and willingness of GGBS producers to invest in GGBS facilities could be delivered just as well by more competitive supply arrangements. Hanson told us that it would incur additional logistical costs to supply GGBS from a network of two rather than three plants, and that it would enjoy lower margins. This applied to Hanson's supply of GGBS for its own internal needs, as well as to its supply to the external customers it would retain. We acknowledged that these might represent costs to Hanson, although they would not necessarily involve an overall loss of market efficiency, given that customers could be supplied from the same plants in a more competitive environment.

13.489 Having considered these submissions, we concluded that any ongoing costs associated with this remedy were unlikely to exceed around £2 million a year.

- *Balance of benefits and costs*

13.490 Having evaluated the potential benefits and costs of these measures, we considered whether their potential costs were likely to be disproportionate to the beneficial effects that would flow from the measures' contribution to remedying the AECs.

13.491 To inform our assessment of this issue, we considered whether introducing these measures would be expected to generate a positive NPV, based on reasonable assumptions about the magnitude of these effects, the timescale over which they took effect, their duration and the rate at which future effects were discounted. This analysis may be found in Appendix 13.10.

²³³ This approach is consistent with the Guidelines, [paragraph 353](#), which states that 'where businesses have been found to be earning profits persistently in excess of their cost of capital as a direct result of a feature of the market, and are likely to continue to do so in the absence of intervention, the CC will not usually give any significant weight to the anticipated reduction of such profits as a negative effect of a remedy'.

13.492 This analysis suggests that, based on a baseline estimate of annual benefits of £17.5 million (ie the mid-point of our estimated range of potential benefits) and based on ongoing costs of separation of £2 million and one-off costs of £10 million, the divestiture of one of Hanson's active GGBS plants could be expected to generate a positive NPV of £144 million over 15 years. We estimated NPVs under a variety of other scenarios by reference to plausible variations around this base case. The NPV of the net benefits of introducing these measures was both positive and substantial in all of the scenarios we considered.

13.493 In light of this analysis and our overall appreciation of the impact of these measures, we concluded that, over the timescale for which we expect these measures to be effective, the beneficial effects of introducing these measures are likely to outweigh significantly their costs.

- *Conclusions on whether the package of remedies produces adverse effects which are disproportionate to the aim*

13.494 In paragraphs 13.447 to 13.493, we have considered separately the effects of those measures which have the primary aim of remedying the coordination AEC and those which have the primary aim of increasing competition in the GGBS supply chain. In both cases we conclude that the beneficial effects of introducing these measures are likely significantly to outweigh their costs. We have also noted the synergies between the two sets of measures, which are mutually reinforcing in their beneficial effects (see paragraphs 13.404 to 13.407). Given this, we concluded that neither the package of remedies taken as a whole, nor any specific measure within this package of remedies, is likely to produce disadvantages which are disproportionate to the aim of remedying the AECs and the adverse effects resulting from them.

Conclusions on the proportionality of the package of remedies

13.495 We concluded that our proposed package of remedies represented a proportionate solution to the AECs and the resulting customer detriment.

Decision on remedies

13.496 We have decided that we should introduce the package of remedies summarized in paragraph 13.5.

13.497 In our judgement, this represents as comprehensive a solution as is reasonable and practicable to the AECs and resulting customer detriment that we have found.