

Cement customer switching

1. This appendix contains evidence and supporting material regarding our cement customer switching analysis as described in Section 7.

Our approach

2. We used a number of key cement suppliers' transaction data in order to construct a comprehensive data set at the customer and job-site level with details on how and from where customers and job sites source cement. Using this data set we looked first at general descriptive evidence on customer and job-site characteristics and purchasing behaviour and general levels of switching across time and suppliers. We then examined patterns in switching over time and across suppliers, patterns in the relationship between switching and market shares and patterns in the relationship between switching and prices. We also analysed data on cement customer switching submitted to us by Lafarge, Hanson and Cemex.

Data and methodology

Data

3. Our raw data source is the transaction data provided by the four domestic cement producers (Lafarge, Cemex, Hanson and Tarmac) and four cement importers (Aggregate Industries, [REDACTED], [REDACTED] and [REDACTED]). We restricted our analysis only to sales of bulk cement.¹
4. The data sets include internal and external transactions. They record the price and volume of the cement sales made by each company in every period and the name and address details of each respective customer.
5. For the majority of suppliers we have monthly transaction data covering the period 2007 to 2011. However, we are missing some transaction data:
 - (a) we do not have [REDACTED] data for 2007 and Cemex's data for January 2007;
 - (b) [REDACTED] provided quarterly data only; and
 - (c) we do not have any transaction-level information for other importers so our analysis will not capture any switching events to or from these suppliers.

Matching methodology

6. We prepared a consolidated data set at the customer level in order to calculate total cement purchases of each customer from the eight cement suppliers and to identify switching events. A key challenge with this exercise is to match customer records across the different data sets provided by the cement suppliers, ie to identify

¹ Here and in the remainder of this appendix and annexes, unless stated otherwise, we refer only to sales of bulk cement by the four GB cement producers (Cemex, Hanson, Lafarge and Tarmac) and the four importers of cement for which we had data available to conduct the analysis (Aggregate Industries, [REDACTED]). When we refer to total cement sales, this refers to total bulk cement sales.

instances where the same customer and job site appear in different suppliers' data sets.

7. This has been achieved in two steps. First, we standardized customer names across companies. Second, we used these standardized customer names and details of the customer delivery address to link together records from different data sets that related to the same customer job site.
8. In order to standardize customer names across the cement suppliers' data sets, we used a number of different techniques. Specifically, we:
 - (a) reviewed an alphabetical list of all customers, looking for alternate spellings of the same customer name;
 - (b) reviewed information provided by [X] on the wider group to which each customer in their database belongs;
 - (c) reviewed customers located close to other customers with similar names, checking for alternate spellings;
 - (d) reviewed any additional customer details contained in the transactions data sets; and
 - (e) tidied any instances where customer names were recorded in different formats.
9. In order to group customer delivery sites together, we began by searching for all instances in any of the suppliers' data sets where customers with the same name were located within a short distance of each other. We used a tolerance of 2.5 miles in order to allow for some variation in how the location of each customer had been geocoded by each supplier. In order to avoid different delivery sites being erroneously labelled as the same entity, we manually reviewed all groupings containing more than one customer record in a single supplier's database.
10. A small number of observations were missing geographic information. For these customers we used any delivery details that had been provided in order to attempt to match these to any job sites existing in our database (if such job sites existed).
11. As a final step, internal transactions were added to the database. For these customers there was no requirement to standardize names; these delivery addresses were assigned to groupings using the same method as for external customers.
12. Using a matched database of this type raises a number of difficulties. In particular, our data set may be incomplete to the extent that (a) some customer names remain unmatched, (b) there may be errors in how transactions have been recorded or geocoded by the cement suppliers, (c) there may be transactions missing from the suppliers' databases, and (d) some job sites may have been wrongly matched or may have remained unmatched. We note that a failure to match customer names and/or job sites is likely to introduce systematic error in our analysis, ie it will reduce the number of switching events that we observe.

Switching definition

13. We used the matched data set to identify customer switching at job-site level between the eight cement suppliers. Some discretion was required in order to define customer wins and losses, because purchasing and switching patterns differ across customers. Switching can vary with respect to the following characteristics:

- (a) completeness—this relates to whether the winner captures all of the customer’s demand;
 - (b) longevity—this relates to whether the win is permanent, or whether the customer switches again at a later stage (eg whether a customer switches to a different supplier only for a very short time); and
 - (c) immediacy—this relates to whether a win is observed in the period immediately after the rival stops supplying, or whether there is a gap or an overlap in supply.
14. In our analysis we focus on switches with the following characteristics:
- (a) The supply periods before and after the event are three months or more. One implication of this is that we do not include the first three months of 2007 and the last three months of 2011 in our analysis.
 - (b) The supply periods before and after the event do not have to be continuous but we allow for gaps that last up to two months (ie we also allow for ‘patchy’ switches).
 - (c) The switches involved 25 per cent or more of the job site’s demand—this means we are able to capture partial switches (eg instances where a customer keeps sourcing some cement from its previous supplier after it switches to a new supplier).
15. Thus, our switching data may underestimate the degree of switching as it may not capture all customer switching for bulk cement, because we do not observe switches to importers not included in our database, switches to collected (as opposed to delivered) cement, or short switches (that last less than three months).
16. In [Annex A](#) we describe the checks we conducted in order to test the sensitivity of our results to alternative (less strict) switching definitions. We ‘relaxed’ our criteria for identifying wins and losses, ie we identified as switches more of the short-term switches (eg switches for less than three months) and more ‘patchy’ switches. With these criteria, we identified about 18 per cent more wins and losses than before, although this varied slightly across suppliers. In terms of value, we identified at most 13 per cent more switching, although again, this varied across suppliers.
17. We also cross-checked our switching data with the switching data submitted by the three largest GB cement producers. We found that our data matched to a large extent their data on wins and losses (around 72 per cent overlap). The only exception to this was Cemex, [X].

Cement customer purchasing behaviour

Number and size of cement customers

18. In total for the period 2007 to 2011, we identified a total of 900 buyers of delivered bulk cement for the cement suppliers included in our analysis, and a total of 3,859 delivery sites (this may be an overestimate because of difficulties associated with the matching of data sets, as explained in paragraphs 6 to 12). In any given year, there are approximately 600 cement customers active in GB, and approximately 2,000 delivery sites. Around 45 per cent of cement delivery sites are owned by the five Majors. Six hundred and five customers have only a single job site and 44 customers

have ten or more job sites. Table 1 summarizes the average number of customers supplied by supplier and the average number of job sites per customer.²

TABLE 1 Number of customers and number of jobsites per customer by supplier

Supplier	Average number of customers supplied in a year	Average number of job sites per customer
Lafarge	[REDACTED]	[REDACTED]
Hanson	[REDACTED]	[REDACTED]
Cemex	[REDACTED]	[REDACTED]
Tarmac	[REDACTED]	[REDACTED]
[Importer X]	[REDACTED]	[REDACTED]
[Importer Y]	[REDACTED]	[REDACTED]
[Importer Z]	[REDACTED]	[REDACTED]
Aggregate Industries	[REDACTED]	[REDACTED]

Source: CC analysis of parties' transaction data.

19. The 20 largest customers in terms of share of total cement volumes over the entire period 2007 to 2011 (including internal sales) are shown in Table 2. We note that the top 20 customers accounted for 77 per cent of total sales volumes in 2007 to 2011 and that the top five customers (which were the five Majors) accounted for 61 per cent of total sales.³

TABLE 2 Top 20 customers in terms of purchases and share of total sales

Rank	Customer	Total purchases kt	Share %	Rank	Customer	Total purchases kt	Share %
1	[REDACTED]	[REDACTED]	[REDACTED]	11	[REDACTED]	[REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]	[REDACTED]	12	[REDACTED]	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]	[REDACTED]	13	[REDACTED]	[REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]	[REDACTED]	14	[REDACTED]	[REDACTED]	[REDACTED]
5	[REDACTED]	[REDACTED]	[REDACTED]	15	[REDACTED]	[REDACTED]	[REDACTED]
6	[REDACTED]	[REDACTED]	[REDACTED]	16	[REDACTED]	[REDACTED]	[REDACTED]
7	[REDACTED]	[REDACTED]	[REDACTED]	17	[REDACTED]	[REDACTED]	[REDACTED]
8	[REDACTED]	[REDACTED]	[REDACTED]	18	[REDACTED]	[REDACTED]	[REDACTED]
9	[REDACTED]	[REDACTED]	[REDACTED]	19	[REDACTED]	[REDACTED]	[REDACTED]
10	[REDACTED]	[REDACTED]	[REDACTED]	20	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of parties' transaction data.

20. Table 3 shows bulk cement sales by customer type and customer size category (based on annual sales of bulk cement to these customers in GB). The table shows that the Majors accounted for around 61 per cent of all cement purchases in the period 2007 to 2011 (delivered bulk cement, including internal sales).

² Lafarge Tarmac told us that it has not been able to reconcile the figures presented in this table. Lafarge Tarmac told us it obtained similar figures for the average number of customers supplied in a year and average number of jobsites per customer, but noted that its figures were higher on both counts.

³ Lafarge Tarmac told us that it has not been able to reconcile all of the figures in this table, though noted that the figures were very similar or identical in many instances and that the ranking was also similar in many instances.

TABLE 3 Number and size of bulk cement customers

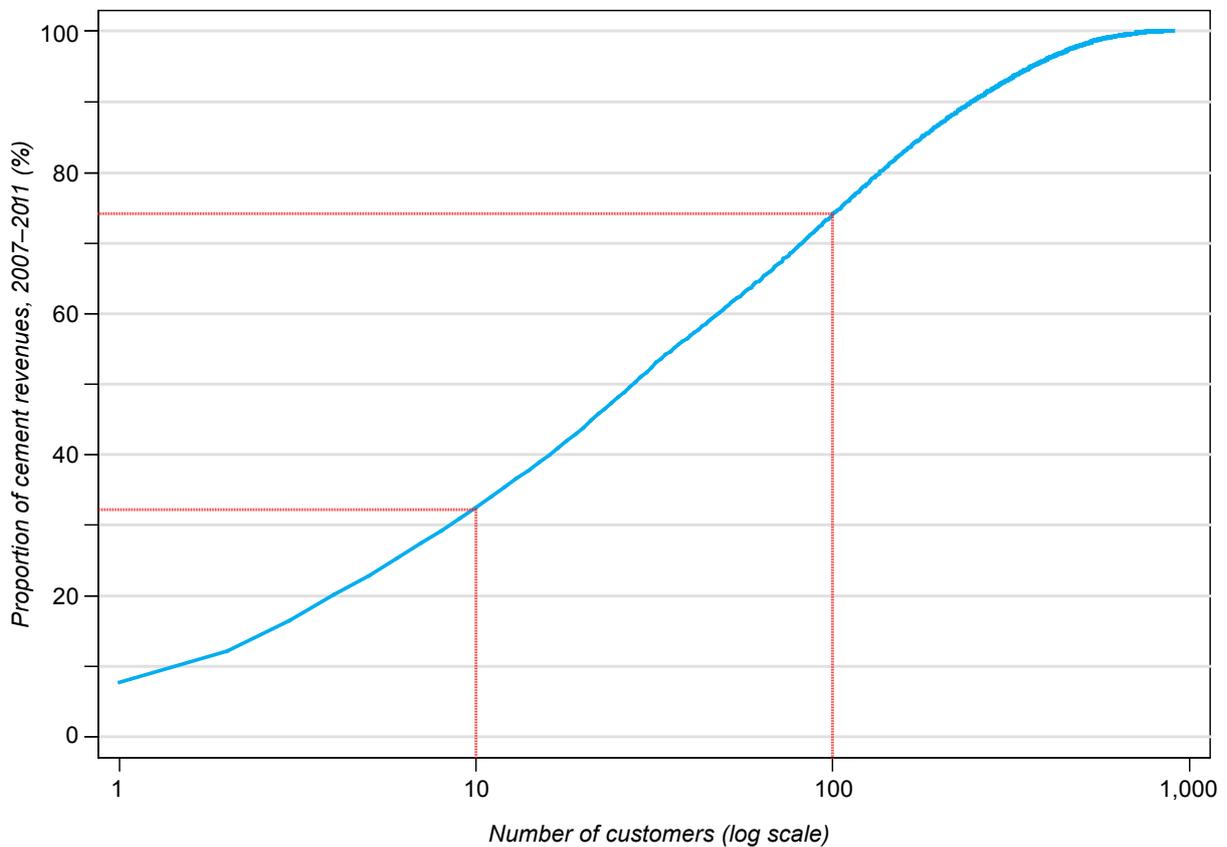
Category	Number of customers	Total purchases kt	Share of all purchases %
Major	5	[X]	60.7
Big (20+ kt per year)	50	[X]	24.1
Medium (5–20 kt per year)	151	[X]	10.0
Small (<5 kt per year)	695	[X]	5.2

Source: CC analysis of parties' transaction data.

21. Figure 1 shows the proportion of revenue of the eight cement suppliers accounted for by customers ranked by their size. Excluding purchases by the Majors, the largest ten customers accounted for around a third of all bulk cement sales, while the largest 100 customers accounted for around three-quarters of all sales.

FIGURE 1

Top customers and proportion of cement revenue



Source: CC analysis of cement suppliers' transaction data.

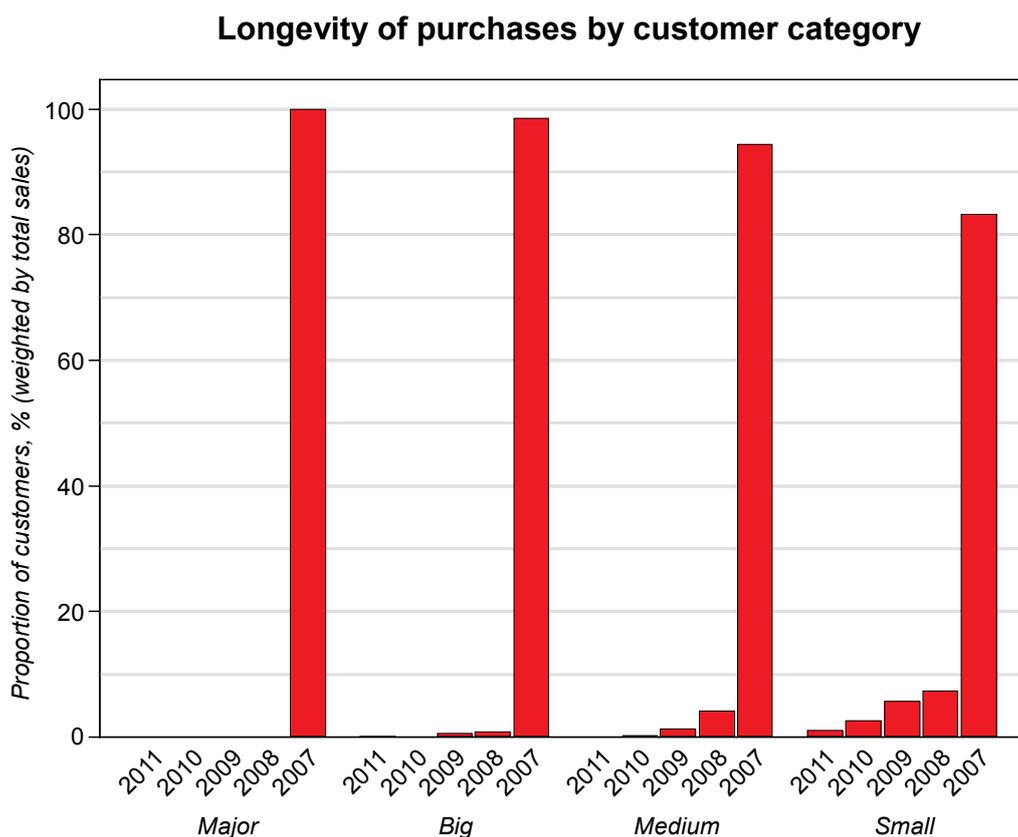
Longevity and frequency of cement demand

22. We looked at how long-lasting and how frequent demand for cement is. Specifically, we calculated how long customers in our data have been purchasing cement for in general and how long customers as well as job sites have been purchasing from a given supplier over the entire period. We also calculated how frequently job sites purchased cement over the entire period. This evidence is summarized below.

Longevity of cement demand

23. In order to assess longevity of demand for cement, we took all customers active in December 2011 and looked at the year in which sales were first observed for those customers (irrespective of whether they or their sites switched suppliers or multi-sourced). Figure 2 shows the longevity of purchases by customer category. Across all customer categories the vast majority of cement customers have been purchasing cement since at least 2007 (and may have been purchasing since before 2007). Overall we can see that demand is long term—that is, most customers have been purchasing cement for the last five years at least.

FIGURE 2



Source: CC analysis of parties' transaction data.

24. We examined customer longevity with a given cement supplier. Table 4 shows the average number of months customers purchase from a given supplier, by customer size category; the lower part of the table shows the average number of months job sites stay with a given supplier. We observe that customers tend to purchase from a single supplier for at least one year, but mostly for longer (two or more years): for example, the largest customers have purchased from Lafarge on average for 41 months, from Hanson 32 months, from Cemex 30 months and from the three independent cement importers in excess of 30 months. Longevity of smaller customers tends to be lower, but still in excess of two years. At the job-site level, average longevity with a given supplier is lower, but still significant—for example, large and medium customer job sites stay with a given supplier for one to two years (considering purchases from the largest three cement producers and the three independent cement importers). We note that these figures may underestimate longevity as some customers or job sites (particularly the smaller ones) may have gaps in their

purchases of cement (ie there are months where they do not make any cement purchases).

TABLE 4 Average customer longevity by customer size category and cement supplier

Customer size category	months							
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]
<i>Customer longevity</i>								
Cement Major	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Big (20+ kt per year)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Medium (5–20 kt per year)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Small (<5 kt per year)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Job-site longevity</i>								
Cement Major	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Big (20+ kt per year)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Medium (5–20 kt per year)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Small (<5 kt per year)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of parties' transaction data.

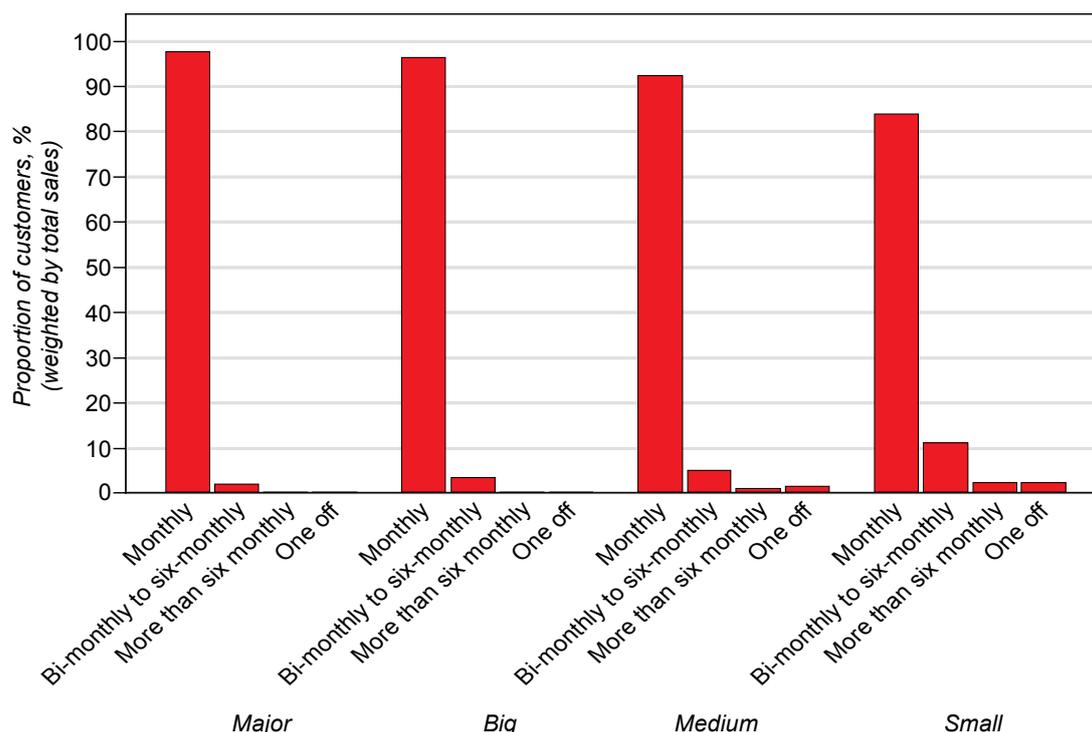
Note: Customer longevity is calculated by first calculating the total number of months that a customer has purchased cement from a given supplier over the entire period, and then averaged across customers. The same approach was used for calculating job-site level longevity. Our data contained 60 months of data for all suppliers but [X], which had 48 months of data (2008 to 2011), and [X] (which did not have data for January 2007).

Frequency of cement demand

25. We also examined the frequency of purchases of individual job sites. Figure 3 summarizes the frequency of purchases by customer type. We see that across all sizes of customer, the vast majority of cement is purchased monthly (or more frequently) by cement job sites (although this may vary across job sites). Some of the smaller customers purchase cement less frequently than the larger customers.

FIGURE 3

Frequency of purchases by customer category



Source: Cement suppliers' transaction data.

Multi-sourcing

26. We looked to see whether and how customers and job sites multi-source cement. As shown in Table 5, most customers (over 90 per cent) have sourced cement from at least two suppliers in the period from 2007 to 2011. A large proportion of job sites (about 60 per cent) have purchased cement from at least two suppliers in the period from 2007 to 2011 which could be due to (simultaneous) multi-sourcing or due to switching.

TABLE 5 Multi-sourcing over time

Number of suppliers 2007–2011	Number of job sites	Proportion of sales %	Number of customers	Proportion of sales %
1	2,742	41.3	517	7.2
2	863	39.9	246	11.3
3	225	15.9	105	18.9
4	27	2.8	26	22.2
5	2	0.1	5	15.6
6	0	0.0	0	0.0
7	0	0.0	2	24.8
Total	3,859		901	

Source: CC analysis of cement suppliers' transaction data.

27. Table 6 also shows that most job sites (representing 82 per cent of all volumes) do not simultaneously source from more than one supplier, although a non-trivial proportion does. On the other hand, almost all of the largest customers purchased cement from more than one supplier at the same time between 2007 and 2011.

TABLE 6 Simultaneous multi-sourcing

<i>Number of suppliers 2007–2011</i>	<i>Number of job sites</i>	<i>Proportion of sales %</i>	<i>Number of customers</i>	<i>Proportion of sales %</i>
Source from only one supplier at any one time	3,618	82.0	763	15.0
Source simultaneously from more than one supplier, but for less than half of the period 2007–2011	185	11.7	90	5.3
Source simultaneously from more than one supplier for more than half of the period 2007–2011	56	6.3	48	79.8

Source: CC analysis of cement suppliers' transaction data.

Characteristics of bagged cement customers

28. As a separate analysis (ie not based on the bulk cement customer data we use in all the other parts of this appendix), we also looked at the characteristics of bagged cement customers, and found that:⁴

(a) [REDACTED]

(b) [REDACTED]

(c) [REDACTED]⁵

29. This shows that, as for bulk cement, the bagged cement customer base is fairly concentrated, but not concentrated enough that the loss of a single customer would have a severe impact on profits (apart from a very few of the largest customers), and purchases tend to be frequent.

Analysis of switching

Measuring switching

30. To measure switching, we examined customer switching at a job-site level—that is, we examined changes of cement suppliers by customer job sites. Thus, in the remainder of this appendix, 'customer switching' means customer job sites changing their suppliers of bulk cement. We used the value of wins and, for some results, the value of losses as a measure of switching in the market. This is likely to be a better measure of the extent of switching than the number of events, since it takes into account the different size of customers.

31. For monthly analysis, we calculated the value of the switch as the average monthly purchase volume of the customer after the switch (or, for loss events, before the loss). For annual analysis, we defined the value of the switch as the estimated annual purchases (in tonnes) by the customer. In order to do this, we multiplied the estimated monthly volume switched by 12 in order to estimate the annualized value of the switch. The value of the switch was attributed to the year in which the month of the switch falls.⁶ This approach could lead to an overestimation of the extent of switching, since a non-negligible proportion of switches in our data last less than 12

⁴ [REDACTED]

⁵ Lafarge told us that it could not replicate these figures exactly, although it did obtain similar figures. As it did not provide alternative figures, we present the figures we calculated, noting that we used these figures simply to describe the characteristics of bagged cement customers and slightly different figures would not have altered our arguments based on this description.

⁶ Thus, for example, if a customer switched in December 2008 (ie it was purchasing cement from one supplier until the end of 2008 and then purchased cement from another supplier from January 2009), the value of the switch would be attributed to 2008 and not 2009.

months (see paragraph 37 and Tables 9 and 10 below on the length of switches) and since some switches are 'patchy' (eg because not all customer job sites purchase cement every month).

32. For both monthly and annual analysis, we examined the value of wins (or losses) relative to the winning (or losing) supplier's total (external and internal) sales volume of bulk cement over the relevant period. This accounts for different sizes of suppliers as well as for varying volumes of sales over time. For reference, we show total sales volumes used as the denominator in Annex B. We observed a similar pattern of wins and losses over time and across suppliers when we used absolute values of wins and losses.
33. We examined switching of all external customers and for independent customers and other Majors (ie cross-sales) separately in some instances. We note that switches by other Majors include any internalization events and that the value of the switch is attributed to the year in which the month of the switch falls. In a number of instances we focused on switching for the three largest GB cement producers ('Top 3'), ie Lafarge, Hanson and Cemex, in order to see how switching compared between them and importers and whether there were any patterns in switching among the Top 3 that could be indicative of tit-for-tat strategies.
34. We measured switching over the following periods and frequencies: monthly switching from April 2007 to September 2011, annual switching from 2007 to 2011 (although we did not capture all the switching in 2007 and 2011 as our data did not include switching in the first three months of 2007 and the last three months of 2011) and overall switching in the period from 2008 to 2010 (this was in order to exclude years for which we did not have full data on switching).

Average levels and length of switching

Average monthly levels of switching

35. Table 7 presents data on the average monthly levels of wins. On average, we see that each of the Top 3 suppliers wins two to three external (independent and Major) customers a month, accounting for around [X] per cent of total revenue. The Top 3 have around 1.5 to 2 wins of independent customers per month, but they account for less than [X] per cent of sales volumes (indicating that wins of other Majors tend to be larger by volume than wins of independents).⁷

⁷ Lafarge Tarmac told us that these percentages were lower than in its own database of wins and losses, and that the lower figures obtained in Table 7 were likely to be a consequence of our methodology of defining wins and losses, which will not necessarily capture correctly all wins and losses.

TABLE 7 Average monthly levels of switching: wins

Company	Average job-site wins per month		Average customer wins per month		Wins as a proportion of total sales volume (%)	
	All external	Excluding majors	All external	Excluding majors	All external	Excluding majors
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

36. Table 8 presents data on the average monthly levels of losses. Average monthly losses tend to be higher than average monthly wins for the Top 3, but it is the other way round for importers (except for [X]), which on average have more wins than losses (this is consistent with an increasing market share of importers over time).

TABLE 8 Average monthly levels of switching: losses

Company	Average job-site wins per month		Average customer wins per month		Wins as a proportion of total sales volume (%)	
	All external	Excluding majors	All external	Excluding majors	All external	Excluding majors
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

Length of switches

37. We also calculated some statistics describing the length of switches. Tables 9 and 10 show the results. We see that switches are in general long term, although a non-negligible proportion of switches appear to last less than one year. If we exclude 2011 for wins and 2007 for losses we get a more accurate picture on the length of switches lasting less than a year. Around one-third of switches in our data last less than a year, although average length of switches is nearly two years.

TABLE 9 Length of switches

	Supply periods after a win	Supply periods before a loss
Average number of months	20	18
% of switches lasting <6 months	22	22
% of switches lasting <12 months	40	37

Source: CC analysis of cement suppliers' transaction data.

TABLE 10 Length of switches excluding 2007 for losses and 2011 for wins

	<i>Supply periods after a win</i>	<i>Supply periods before a loss</i>
Average number of months	20	22
% of switches lasting <6 months	20	22
% of switches lasting <12 months	33	41

Source: CC analysis of cement suppliers' transaction data.

Patterns of switching over time

Annual levels of switching over time

38. [Annex B](#), Tables 12 to 15, show annual levels of switching by supplier. They present the volume of external customer (either all external customer or independent only) wins and losses as a proportion of each supplier's total annual sales volume.
39. We see from this analysis that 2008 and 2009 stand out as years with relatively high levels of switching, largely due to Hanson internalization of purchases from Lafarge and all the switching of cross-sales and independent customers that followed. For example, Tables 12 and 13 of Annex B show that in 2008 and 2009 there were relatively high losses of customers and that most of the Top 3's losses in 2008 and 2009 were losses of Majors (ie cross-sales).⁸ [Annex B](#), Table 14, shows that wins of all external customers by the Top 3 in 2009 were at least double of what they were in 2007/08 and wins then fell back to relatively low levels in 2011. From Table 15 of [Annex B](#), we see that wins of independent customers by Lafarge and Hanson more than tripled in 2009 when compared with 2008.
40. Wins of independent customers account for less than [%] per cent of the Top 3's sales (except for 2009), and for generally higher levels (in the region of [%] to [%] per cent) of the non-Major importers' sales. In this analysis losses will appear to be higher than wins because losses of external customers include losses due to internalization which will not show up as wins. We also see that importers appear to win more independent customers than the Top 3 or [%] or [%] (in terms of volumes won as a proportion of total sales volume).
41. [Annex B](#), Table 16, shows the wins of Major customers. Except [%], there are no switches of Majors to importers. [%]
42. [Annex B](#), Tables 17 and 18, show the internalization levels (wins of own sites) by the five Majors in terms of volume levels and volumes as a proportion of total sales respectively. We see that 2009 stands out as the year with the highest level of internalization. The year with the lowest level of internalization was 2007, while 2008, 2010 and 2011 lie somewhere in between.

Monthly levels of switching over time

43. We conducted a similar analysis on monthly data. [Annex B](#), Figures 1 to 5, present graphs with the monthly wins and losses by supplier for Lafarge, Hanson, Cemex and Tarmac. The graphs show the volume of external customer wins and external customer losses as a proportion of total monthly sales volumes.

⁸ Lafarge's losses in 2008 reflect Hanson's internalization (as it appears as a switch in our data in December 2008).

44. Lafarge's data ([Annex B](#), Figure 1) shows a very large spike in its losses at the end of 2008 (amounting to around [X] per cent of its total sales of cement in that month), which represents Hanson's internalization.⁹ When we do the same analysis excluding Hanson's internalization ([Annex B](#), Figure 2), we observe that there is a relatively high level of switching activity in 2009 and then again at the end of 2010/beginning of 2011 (in the range of [X] per cent of Lafarge's total sales of cement in those months). Lafarge's losses at the end of 2010 were largely due to [X].
45. Hanson's data ([Annex B](#), Figure 3) shows that Hanson incurred large losses at the beginning of 2009 (around [X] per cent of its total sales for that month) which were associated with losses to Lafarge. We also observe a relatively higher level of losses (around [X] per cent of its total sales) at the end of 2010/beginning of 2011. These losses were largely due to [X].
46. Cemex's data ([Annex B](#), Figure 4) shows a relatively higher level of switching (and especially losses) around 2009 and at the end of 2010. These losses represented around [X] per cent of Cemex's total sales in the affected month in 2009 and around [X] per cent at the end of 2010. Cemex's losses at the end of 2010 were due to [X].
47. Tarmac's data ([Annex B](#), Figure 5) shows relatively higher levels of wins in 2009 (around [X] per cent of its total sales) and at the end of 2010/beginning 2011 (slightly less than [X] per cent of its total sales).
48. Overall we see that the trends in the monthly data are consistent with the trends in the annual data. The highest levels of switching activity were observed in 2009 and were related to Hanson's internalization. In the monthly data we were also able to observe a relatively high switching activity (although smaller in magnitude than that of 2009) around the end of 2010/beginning of 2011 which seems to have been associated with the Majors switching away from each other and increasing self-supply.

Patterns of switching among suppliers

Overall patterns

49. [Annex B](#), Tables 1 to 4, show the total number of wins and losses between every pair of suppliers from 2007 to 2011 for either all external customers (Majors and independents) or independent customers only.¹⁰ We see that the highest level of switching activity (wins and losses) is between the Top 3 cement producers both in terms of all external customers and independent customers. The importers have won a number of independent customers from the Top 3 (especially [X] from [X]) but have also lost a number of independent customers to the Majors (especially [X] and [X] who lost to [X]).
50. [Annex B](#), Tables 6, 7, 9 and 10, show wins and losses between every pair of suppliers in terms of volumes won/lost as a proportion of total (external and internal) bulk cement sales ([Annex B](#), Tables 5 and 8, also show the levels) from 2008 to 2010. Again, we distinguish between all external customers and independent customers only.¹¹ Wins of all external customers among the Top 3 ranged from 1.9 to 7.5 per cent of their total sales volumes. Wins of independent customers among the

⁹ In our data set, Hanson's internalization appears in December 2008.

¹⁰ Aggregate Industries told us that the figures in [Annex B](#), Tables 1–18, appeared to be based on Aggregate Industries' original cement transaction data rather than on an updated version subsequently submitted to the CC. We do not think this would materially affect our results.

¹¹ Lafarge Tarmac told us that total sales would be an appropriate benchmark in the context of switching of all customers (ie wins and losses together).

Top 3 ranged from 1.1 to 3.3 per cent of their total sales volumes. Wins by Hanson from Lafarge and vice versa represent the largest proportion of wins for these two suppliers. Wins by importers of independent customers from the Top 3 ranged from 0.4 to 7.9 per cent of their total sales in that period. The wins (as a proportion of total sales) were highest for [REDACTED] which won volumes from [REDACTED].

51. Losses are also high among the Top 3. Losses of all external customers among the Top 3 ranged from 2.4 to 13.4 per cent of their total sales volumes for the period and losses of independent customers among the Top 3 ranged from 0.9 to 3.2 per cent of their total sales volumes. Losses by Hanson to Lafarge and vice versa represent the largest proportion of losses for these two suppliers, especially in relation to all external customers, showing that the high levels of switching between them were related to [REDACTED]. Importers have sustained relatively high losses of independent customers to the Top 3. Their losses to the Top 3 ranged from 0.4 to 7.1 per cent of their total sales volumes. The losses (as a proportion of total sales) were highest for [REDACTED] which lost volumes to [REDACTED].

Switches and market shares

52. One possible benchmark for assessing whether switching between a given pair of suppliers is 'high' or 'low' is diversion ratios, calculated based on suppliers' market shares. The reasoning behind this is as follows. Suppose there are three suppliers, A, B and C, and their market shares are 50, 30 and 20 per cent respectively. When A's customers switch, they can go to Supplier B or Supplier C. In this 'residual market' consisting of B and C, their respective shares are 60 and 40 per cent (this is what we call 'residual market shares'). If we observe that 60 per cent of A's ex-customers switch to B and 40 per cent switch to C, switching, or diversion ratios, would be in line with residual market shares. So, for instance, if we observed that 40 per cent of A's ex-customers switch to B and 60 per cent switch to C (ie diversion not in line with residual market shares), this could indicate that A and C are particularly close competitors and/or that rivalry for customers between A and C is stronger than it is between A and B.
53. Therefore we compared overall levels of switching between the suppliers with their residual market shares. First, we calculated diversion ratios based on our switching data. We defined diversion from A to B as follows: of all the wins from Supplier A, what proportion was won by Supplier B. We measured diversion in terms of total volumes switched between 2008 and 2010 (such that our switching data covers full years). Tables 11 to 13 show diversion ratios for different groups of customers, where 'losing' suppliers are listed in the first column and the 'winning' suppliers are listed in the column headings.

TABLE 11 Switching of all external customers (diversion ratios), 2008 to 2010

Diversion from	Diversion to:							
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]
Lafarge	[X]	[X]	[X]	[X]	[X]*	[X]	[X]	[X]*
Hanson	[X]	-	[X]	[X]	[X]*	[X]	[X]*	[X]
Cemex	[X]	[X]	-	[X]	[X]*	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	-	[X]*	[X]*	[X]	[X]*
Aggregate Industries	[X]	[X]*	[X]	[X]	-	[X]*	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	-	[X]	[X]
[Importer Y]	[X]*	[X]*	[X]*	[X]	[X]	[X]	-	[X]
[Importer Z]	[X]	[X]*	[X]*	[X]	[X]	[X]	[X]	-

Source: CC analysis of cement suppliers' transaction data.

Note: Each row adds up to 100 per cent and estimates based on fewer than five switching events are marked with *.

TABLE 12 Switching of independent customers (diversion ratios), 2008 to 2010

Diversion from:	Diversion to:							
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]
Lafarge	-	[X]	[X]	[X]	[X]*	[X]	[X]	[X]*
Hanson	[X]	-	[X]	[X]	[X]*	[X]	[X]*	[X]
Cemex	[X]	[X]	-	[X]	[X]*	[X]	[X]*	[X]
Tarmac	[X]	[X]	[X]	-	[X]*	[X]*	[X]	[X]*
Aggregate Industries	[X]	[X]*	[X]	[X]	-	[X]*	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	-	[X]	[X]
[Importer Y]	[X]*	[X]*	[X]*	[X]	[X]	[X]	-	[X]
[Importer Z]	[X]	[X]*	[X]*	[X]	[X]*	[X]	[X]	-

Source: CC analysis of cement suppliers' transaction data.

Note: Each row adds up to 100 per cent and estimates based on fewer than five switching events are marked with *.

TABLE 13 Switching of Majors (diversion ratios), 2008 to 2010

Diversion from	Diversion to:				
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries
Lafarge	-	[X]	[X]	[X]	[X]*
Hanson	[X]	-	[X]*	[X]*	[X]*
Cemex	[X]	[X]	-	[X]	[X]
Tarmac	[X]*	[X]	[X]	-	[X]
Aggregate Industries	[X]	[X]*	[X]	[X]	-

Source: CC analysis of cement suppliers' transaction data.

Note: Each row adds up to 100 per cent and estimates based on fewer than five switching events are marked with *.

54. In its response to our provisional findings, Cemex noted that a large proportion of wins of external customers from the importers were by Cemex, as shown in Table 11, indicating that Cemex, in particular was competing hard with importers.¹² We did not agree with Cemex's interpretation. The results in Table 11 show that Cemex's share of wins of external customers from importers is more or less in line with Cemex's share of the market, and is therefore as might be expected. The exception to this relates to the wins from [Importer Y], where Cemex accounted for [X] per cent of

¹² Cemex response to provisional findings, paragraph 15.10.

wins. However, as noted in Table 11 itself, this figure is based on fewer than [redacted] switching events. We consider that this is a low sample of events, and together with the findings relating to the wins of external customers from other importers, an unsound basis from which to infer that Cemex is competing particularly hard with importers. We also note that Cemex's share of wins of independent customers from importers, shown in Table 12, is also roughly in line with its share of the cement market.

55. We then estimated residual market shares by taking out the supplier in question (ie from which diversion is measured) and calculating shares among all the other suppliers. Market shares are measured in terms of sales volume (in tonnes) to external customers (ie exclude internal sales) of delivered bulk cement (we use 2008 to 2010 total to be comparable to our figures of diversion patterns). Table 14 shows residual market shares based on excluding the supplier listed in the column heading from the calculation of market shares.

TABLE 14 Residual market shares*

per cent

Residual market shares of:

Diversion from	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]
Lafarge	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Hanson	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Cemex	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Tarmac	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Aggregate Industries	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[Importer X]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[Importer Y]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[Importer Z]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: Cement suppliers' transaction data.

*Each row adds up to 100 per cent; market share calculated in terms of external sales, 2008 to 2010 average.

56. In order to understand whether diversion is in line with market shares, we compare each cell of the residual market share table with the respective cell in the switching tables. We summarize our main observations below.

- (a) Diversion from Lafarge: we observe more diversion (by some margin) to Hanson and less to Cemex than their residual market shares would suggest (this applies to diversion switching by the independents as well as the Majors).
- (b) Diversion from Hanson to other Majors is largely in line with their residual market shares.¹³
- (c) Diversion from Cemex: there is less diversion to Lafarge and more diversion Hanson and Tarmac than their market shares would suggest; diversion to Tarmac is particularly high relative to Tarmac's residual market share, and this diversion is mainly accounted for by switching of the Majors.

¹³ Hanson told us that its market share had reduced in the last decade, which would suggest that diversion was unlikely to be in line with market shares. We noted that our analysis covered the past five years, and related only to diversion to other Majors: Hanson's share relative to other Majors had stayed broadly stable in the past five years, which is consistent with the findings in paragraph 56(b). Hanson also queried whether this result was in line with the growth in the share of importers. We noted that the statement above only related to diversion from Hanson to other Majors. As noted in paragraph 56(e), it was difficult to make observations on diversions to and from importers due to the low number of switching events in the data.

(d) Diversion from Tarmac and from [Importer X]: there is less diversion to Lafarge and more diversion to Hanson and Cemex than their residual market shares would suggest.

(e) It is difficult to make observations on diversions to/from other importers due to the low number of switching events.

57. Thus, we find that although switching (diversion) is not always in line with market shares, there is no consistent pattern to this.¹⁴ We note that some of the observations we made could be explained by internalisations of cement supplies.

Patterns over time

Wins from the Top 3 and wins from Tarmac and the importers

58. We examined switching patterns over time among the suppliers of cement in our data set. Table 15 shows the wins of independent customers from the Top 3 (ie Lafarge, Hanson and Cemex) as a proportion of total sales volumes. Importers' wins from the Top 3 seem to be relatively high in relation to their overall sales of cement and in relation to wins by the Top 3 among themselves.

TABLE 15 Wins of independent customers from the Top 3 (Lafarge, Hanson, Cemex) as a proportion of total sales volume

Wins by	per cent						
	2007	2008	2009	2010	2011	2008–2010	2007–2011
Lafarge	[REDACTED]						
Hanson	[REDACTED]						
Cemex	[REDACTED]						
Tarmac	[REDACTED]						
AI	[REDACTED]						
[Importer X]	[REDACTED]						
[Importer Y]	[REDACTED]						
[Importer Z]	[REDACTED]						
All	1.0	2.7	5.7	2.0	1.5	3.4	2.6

Source: CC analysis of cement suppliers' transaction data.

59. Table 16 below shows the wins of independent customers from Tarmac and importers as a proportion of total sales volumes. The wins by the Top 3 of independent customers appear to have remained constant or increased since 2007 while there appears to be no clear trend in the wins by the importers.

60. Importers' wins are mainly from the Top 3, which is consistent both with the Top 3 being the largest suppliers and with importers' terminals being located in different parts of GB. The Top 3 are losing customers to the importers, but they are also winning customers from the importers, [REDACTED].

¹⁴ Some cement suppliers commented that our analysis of switching and market shares showed that switching patterns did not consistently accord with the preservation of market shares. This is not correct; as explained in paragraph 52 above, our analysis here examines whether patterns of switching among cement suppliers appear to be consistent with what one might expect based on suppliers' residual market shares, and no conclusions can be drawn from this analysis as regards the preservation of market shares.

TABLE 16 Wins of independent customers from Tarmac and the four importers in our dataset, as a proportion of total sales volume

Wins by	per cent						
	2007	2008	2009	2010	2011	2008–2010	2007–2011
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All	0.4	0.5	1.0	0.9	1.4	0.8	0.8

Source: CC analysis of cement suppliers' transaction data.

Patterns of switching among the Top 3

- 61. We examined patterns of switching over time between cement suppliers in order to see whether there are any systematic patterns in the switching of customers between the suppliers. In particular, we examined whether the data on switching suggested any matching of wins and losses between pairs of suppliers. Estimates of annual customer switching between the suppliers are shown in Figures 4 to 6.
- 62. With respect to switches between the Top 3, we do not observe an obvious systematic pattern, such as matching of wins and losses between two suppliers, when examining annual data. However, for each year it may also be necessary to look at wins and losses in the previous and subsequent years—this is because wins at the end of one year may be related to losses in the next year. An example of this is the Hanson internalization, which appears as a loss in Lafarge's data in December 2008, but any subsequent wins from Hanson are recorded in 2009. Similar issues may apply to 2010/2011, where [X], [X] and [X] internalized some volumes at the end of 2010.
- 63. We therefore examine patterns in relationships between wins and losses at a more disaggregated (monthly) level next.

FIGURE 4

[X] wins and losses of all external customers from/to other suppliers

[X]

Source: Cement suppliers' transactions data.

FIGURE 5

[X] wins and losses of all external customers from/to other suppliers

[X]

Source: Cement suppliers' transactions data.

FIGURE 6

[X] wins and losses of all external customers from/to other suppliers



Source: Cement suppliers' transactions data.

Correlation of wins and losses

Our approach

64. We wanted to analyse the extent to which losses by one supplier to another were related to previous wins by that supplier from the other supplier, where these wins and losses occurred within relatively short time periods of each other (eg one to two months). For example, if time periods of relatively high volumes of wins by Supplier A from Supplier B coincided with time periods of relatively high losses by Supplier A to Supplier B, this could be indicative of tit-for-tat behaviour. Therefore we examined patterns of wins and losses over time between pairs of cement suppliers using a correlation analysis, whereby we calculated correlation coefficients for monthly volumes won and lost between pairs of cement suppliers.¹⁵ If wins and losses between any two suppliers were positively correlated (and statistically significant¹⁶), this could indicate that there was a degree of matching of wins and losses between these two suppliers and could be indicative of tit-for-tat behaviour.
65. Matching of wins and losses could be contemporaneous (eg in the same month), or there could be a lag (eg A wins from B in month T-1, and A loses to B next month, at T). We do not know how instantaneous one would expect any competitor reaction to a loss of customer(s) to be, and we do not know which supplier, or what, initiated the customer switch. Therefore we also calculated correlations between current losses and *lagged wins* (and between current wins and *lagged losses*), and examined the contemporaneous and the lagged win/loss correlation results as a whole. Correlation coefficients for a given pair of suppliers do not have to be symmetric for there to be evidence consistent with matching of wins and losses. This is because of the way we have measured wins and losses. In particular, internalization by A from B will appear as B's loss in our data but not as A's win (since we focus on all external customers only). Staggering of wins and losses would be another reason why we would not necessarily expect symmetry in correlation coefficients (eg volumes won over several months could be related to losses in a single month). Neither one would require correlation coefficients equal or close to one in order to conclude that there is evidence consistent with matching of wins and losses, as volumes lost and volumes won do not have to be exactly equal (eg because our analysis of wins and losses does not include bagged cement). For this correlation analysis, we also included wins and losses of internal volumes, ie we included both 'internalization' and 'outsourcing' events.

¹⁵ A correlation coefficient is a single number that describes the degree of relationship between two variables; in the context of time series, it indicates the extent to which two time series move in a similar direction. Correlation coefficients range between -1 and 1. The closer the correlation coefficient is to 1, the more changes in one variable are associated with changes of the same sign in the other variable. The closer the correlation coefficient is to -1, then the more changes in one variable are associated with opposite changes in the other variable. A correlation coefficient of 0 indicates changes in one variable are not in any way related to changes in the other variable.

¹⁶ A statistically significant correlation coefficient is a correlation coefficient that is different from zero. That is, statistical significance indicates that the estimated non-zero correlation result is 'real' and has does not occur purely by chance.

Win and loss correlation results

66. Tables 17 to 19 below show correlation coefficients and their statistical significance levels for monthly volumes won and lost between pairs of cement suppliers. We report both correlations of contemporaneous wins and losses and correlations of lagged wins and losses.
67. We observe the following in terms of win and loss correlations between pairs of cement suppliers.
- (a) *Lafarge and Hanson*. There are some relatively high positive and statistically significant¹⁷ correlation coefficients between Hanson's wins from Lafarge at T and Hanson's losses to Lafarge at T ([~~§~~]), between Hanson's wins from Lafarge at T and Hanson's losses to Lafarge at T-1 ([~~§~~]), and between Lafarge's wins from Hanson at T and Lafarge's losses to Hanson at T-1 ([~~§~~]).
 - (b) *Lafarge and Cemex*. There is a positive and statistically significant correlation coefficient between Lafarge's wins from Cemex at T-1 and Lafarge's losses to Cemex at T ([~~§~~]). We note that there are also other positive but statistically insignificant correlation coefficients for lagged wins and losses between Lafarge and Cemex.
 - (c) *Hanson and Cemex*. There are positive and statistically significant correlation coefficients between Cemex's wins from Hanson at T and Cemex's losses to Hanson at T ([~~§~~]), and between Hanson's wins from Cemex at T-1 and Hanson's losses to Cemex at T ([~~§~~]).
 - (d) *Lafarge and Tarmac*. There are a number of positive statistically significant correlation coefficients between contemporaneous and lagged wins and losses between Lafarge and Tarmac (ranging from [~~§~~]).
 - (e) *Lafarge and Aggregate Industries*. There are positive and statistically significant correlation coefficients between Lafarge's wins from Aggregate Industries at T-1 and Lafarge's losses to Aggregate Industries at T ([~~§~~]), and between Aggregate Industries' wins from Lafarge at T and Aggregate Industries' losses to Lafarge at T-1 ([~~§~~]).¹⁸
 - (f) *Cemex and Tarmac*. There are a number of positive statistically significant correlation coefficients between contemporaneous and lagged wins and losses between Cemex and Tarmac (ranging from [~~§~~]).
 - (g) *Independent importers*. There are practically no statistically significant correlations between wins and losses between the five Majors and the independent cement importers. The only exception is a positive and statistically significant correlation coefficient between losses by [Importer Y] to Cemex at T-1 and wins from Cemex at T. We observe that most correlation coefficients of the independent importers are negative.

¹⁷ Unless stated otherwise, where we say 'statistically significant correlation coefficient', we refer to a standard two-tailed significance at the 5 per cent level.

¹⁸ Aggregate Industries told us that it was unable to confirm the correlation calculations contained in Tables 17-19.

TABLE 17 Correlation between wins at T and losses at T (contemporaneous correlation)

Wins/losses of:	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]
Lafarge	-	[⊗]	[⊗]	[⊗]**	[⊗]	[⊗]	[⊗]	[⊗]
Hanson	[⊗]***	-	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]
Cemex	[⊗]	[⊗]**	-	[⊗]***	[⊗]	[⊗]	[⊗]	[⊗]
Tarmac	[⊗]**	[⊗]	[⊗]***	-	[⊗]	[⊗]	[⊗]	[⊗]
Aggregate Industries	[⊗]	[⊗]	-	[⊗]	-	[⊗]	[⊗]	[⊗]
[Importer X]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	-	[⊗]	[⊗]
[Importer Y]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	-	[⊗]
[Importer Z]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	-

Source: CC analysis of cement suppliers' transaction data.

Note: Throughout the tables in this appendix, * denotes statistical significance at the 10 per cent level, ** denotes significance at the 5 per cent level and *** denotes significance at the 1 per cent level.

TABLE 18 Correlation between wins at T-1 and losses at T (one-month lag)

Wins/losses of:	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]
Lafarge	-	[⊗]	[⊗]**	[⊗]**	[⊗]***	[⊗]	[⊗]	[⊗]
Hanson	[⊗]	-	[⊗]**	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]
Cemex	[⊗]	[⊗]	-	[⊗]***	[⊗]	[⊗]	[⊗]	[⊗]
Tarmac	[⊗]***	[⊗]	[⊗]	-	[⊗]	[⊗]	[⊗]	[⊗]
Aggregate Industries	[⊗]	[⊗]	[⊗]	[⊗]	-	[⊗]	[⊗]	[⊗]
[Importer X]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	-	[⊗]	[⊗]
[Importer Y]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	-	[⊗]
[Importer Z]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	-

Source: CC analysis of cement suppliers' transaction data.

TABLE 19 Correlation between wins at T and losses at T-1 (one-month lag)

Wins/losses of:	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]
Lafarge	[⊗]	[⊗]***	[⊗]	[⊗]***	[⊗]	[⊗]	[⊗]	[⊗]
Hanson	[⊗]***	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]
Cemex	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]
Tarmac	[⊗]	[⊗]	[⊗]*	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]
Aggregate Industries	[⊗]***	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]
[Importer X]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]
[Importer Y]	[⊗]	[⊗]	[⊗]***	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]
[Importer Z]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]	[⊗]

Source: CC analysis of cement suppliers' transaction data.

68. Taken together, contemporaneous and/or one-month lag correlation coefficients are positive and statistically significant for wins and losses between Lafarge, Cemex and Hanson, and there are also some statistically significant positive correlation coefficients for wins and losses between the Top 3 and Tarmac and Aggregate Industries. Positive correlation coefficients indicate that wins and losses between two suppliers tend to move together over time, with periods of higher wins being associated with periods of higher losses.
69. We note that the high correlation coefficients for wins and losses between Hanson and Lafarge are likely to reflect Hanson's significant internalization and subsequent customer switching. Our analysis of this internalization event, and parties' comments on this analysis, are set out in Appendix 7.14.
70. Our results for independent importers' correlation coefficients indicate that wins and losses are not strongly correlated (with one exception). Coefficients that are not significantly different from zero indicate that the pattern of wins and losses between a

pair of suppliers is likely to be random. We do, however, see some instances of positive correlations when examining wins and losses at longer lags. Negative coefficients, if statistically significant, could be consistent with competition as higher wins are associated with lower losses (eg this could be due to competitive pricing to win/retain customers).

71. We received a number of comments from the parties in relation to the initial results from our correlation analysis. Where we could address these comments by providing further explanation of our methodology and results, we have done so in this appendix (including adding the results on statistical significance of the correlation coefficients). Where appropriate, we provide responses to other comments below:

(a) 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. We agree that this could be the case in theory; however, if the recovery of lost volumes were random, we would expect to see no consistent relationship between the timing of wins and losses of a pair of suppliers (ie we would expect correlation coefficients not to be statistically different from zero).

(b) [REDACTED] was concerned that our win and loss correlation analysis for [REDACTED] was based on a small number of win events from Lafarge, and that the volumes involved were negligible ([REDACTED] kt over the entire period covered by the analysis).¹⁹ From a technical point of view, it is not necessary to have a great number of switching events to find that wins and losses are correlated in time (eg switching events between two suppliers appearing in only one month and no other months would yield a correlation coefficient of one). Furthermore, the [REDACTED] kt volumes to which [REDACTED] refers relate to estimated annual volumes won from Lafarge between 2008 and 2010. We note that the positive correlation coefficients between Lafarge and [REDACTED] are most likely to be driven by switching events at the beginning of 2011, when [REDACTED] internalized a significant volume of purchases from Lafarge (around [REDACTED] kt per month), and [REDACTED] also lost volumes to Lafarge (around [REDACTED] kt per month).

(c) [REDACTED] 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, operational issues at plants and import terminals, technical issues or differences between customer types. As explained in paragraph 63 above, the purpose of this analysis is to examine the association of wins and losses between pairs of suppliers over time; we have not attempted to explain the drivers of these wins and losses.

(d) Lafarge Tarmac raised concerns regarding our interpretation of some correlation coefficients as 'high', and referred to the R-squared statistic. The R-squared statistic is equal to the squared correlation coefficient. Lafarge Tarmac noted that, for example, a correlation coefficient of 0.5 is equal to an R-squared of 0.25, which meant that only 25 per cent of the variation of one series was associated with variation in the other. We disagree that R-squared would be a relevant statistic in this case. R-squared is typically used when one or more variables are used to model or predict another variable. Through our win and loss correlation analysis, we are not seeking to model or predict wins from losses, or vice versa, therefore R-squared is not a relevant statistic for this analysis.

¹⁹ [REDACTED] also told us that it had not been able to confirm the accuracy of this analysis of correlations.

Switching and prices

72. The Majors told us that customers used switching and threats to switch to achieve better prices. Therefore we examined the relationship between switching and prices in order to understand whether customers that switched achieved lower prices on average. We also sought to understand whether there were any differences by type of customer (eg independents versus Majors) and/or type of supplier (eg Top 3 versus [redacted]/importers).
73. We examined changes in average prices for customer job sites that switched supplier during the period covered by our data set. We focused on ‘win’ events and for each customer we looked at the change in average price paid before and after the switch (we used three-month averages). Where we present results for ‘average change in prices’, this is an average of changes in prices. We included all external customers in our analysis; however, this implies that, where a customer switch was an internalization or an outsourcing event, prices after or before the switch might refer to internal prices.
74. Table 20 below shows the average price changes after switching, by supplier. Across all suppliers, on average [redacted] of all external customers who switch pay lower prices after the switch, and the average reduction in prices is around [redacted] per cent (or £[redacted] per tonne). [redacted]
75. [redacted]

TABLE 20 Average price changes after switching

<i>Wins to</i>	<i>Proportion of switches with lower prices %</i>	<i>Average price change %</i>	<i>Average price change £/tonne</i>
Lafarge	[redacted]	[redacted]	[redacted]
Hanson	[redacted]	[redacted]	[redacted]
Cemex	[redacted]	[redacted]	[redacted]
Tarmac	[redacted]	[redacted]	[redacted]
[Importer X]	[redacted]	[redacted]	[redacted]
[Importer Y]	[redacted]	[redacted]	[redacted]
Aggregate Industries	[redacted]	[redacted]	[redacted]
[Importer Z]	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]

Source: CC analysis of cement suppliers’ transaction data.

76. Table 21 shows the average price changes by type of customer. [redacted]

TABLE 21 Average price changes after switching by type of customer

Wins to	Independent customers			Major customers		
	Proportion of switches with lower prices %	Average price change %	Average price change £/tonne	Proportion of switches with lower prices %	Average price change %	Average price change £/tonne
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

77. Table 22 shows the average percentage price changes for all external customer switches, by pairs of suppliers involved in the switching event. [X] We do not see any evidence from Table 22 suggesting that there are differences in how prices change after a customer changes from a Major to another Major, from a Major to an importer or from an importer to a Major.

TABLE 22 Average percentage price changes for all external customers by pairs of suppliers

Win from:	Winner								per cent
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]	
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

Note: Table does not show results based on fewer than five switching events.

78. Tables 23 and 24 show the average percentage price changes for independents' switches and Majors' switches. From the tables below, [X].

TABLE 23 Average percentage price changes for independents' switches

Win from	Winner								per cent
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]	
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

Note: Table does not show results based on fewer than five switching events.

TABLE 24 Average percentage price changes for Majors' switches*

Win from	Winner			
	Lafarge	Hanson	Cemex	Tarmac
Lafarge	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

Note: Table does not show results based on fewer than five switching events.

79. Table 25 shows the average percentage price changes following switches by supplier and year. [X]

TABLE 25 Average percentage price changes following independents' switches by supplier and year

Switches to	per cent				
	2007	2008	2009	2010	2011
Lafarge	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]
All	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

Note: Table does not show results based on fewer than five switching events.

TABLE 26 Average percentage price changes following Majors' switches by supplier and year

Switches to	per cent				
	2007	2008	2009	2010	2011
Lafarge	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]
All	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

Note: Table does not show results based on fewer than five switching events.

80. We note that this analysis will not capture some cases where a supplier is trying to implement a price increase and customers switch away to secure a lower price increase than they would have paid, had they been subject to the full price increase. In those cases, the data will show the customers paying the same (or even a higher) price than what they paid previously even though they have in fact secured a better price through switching.

81. Hanson told us that the customers might obtain better terms (other than simply a reduction in price) by switching, such as better credit terms. This would not be reflected in the data as a customer paying lower prices, but would still involve the customer securing better terms by switching. Although we acknowledge that this is a possibility, we think it will be relatively rare as, in the majority of the cases, suppliers compete on price in order to defend or win customers. This is shown in Hanson's

own submission that we analyse in [Annex D](#) where Hanson seems to have employed price-related mechanisms in order to defend its customers.

82. Cemex told us that historical price information from five to six years ago (ie 2007/08) was of limited relevance to the analysis and that the focus must be on present conditions of competition in the market, in which customers, operating in a challenging economic environment, are incentivized by price reductions to switch suppliers. Cemex also told us that switching behaviour which results in lower prices was inconsistent with a coordinated market.

Analysis of win/loss records submitted by the parties

83. Some parties have submitted to us their own win/loss records. We have data from [REDACTED].
84. [REDACTED]
85. We used the parties' win/loss records to calculate total volumes won and lost each year and what percentage of these volumes was won/lost from/to each of the other competitors. We only used their records on bulk cement so that we could compare them later with our own switching data on bulk cement. The results from this analysis are shown in [Annex C](#), Tables 1 to 10. Based on the parties' own win and loss records for bulk cement, we made a number of observations for each of these parties.
86. [REDACTED]
87. [REDACTED]
88. [REDACTED]
89. [REDACTED]
90. [REDACTED]
91. Our analysis of [REDACTED], [REDACTED] and [REDACTED] win and loss data also provides an indication of diversion to other GB importers for which we do not have transaction data (eg [REDACTED] etc).

Comparison with our switching data

92. We calculated wins and losses of bulk cement for [REDACTED], [REDACTED] and [REDACTED] using the customer switching data set that we created. These are shown in [Annex C](#), Tables 11 to 22. We then compared these results with the results from the analysis of parties' win/loss records presented in the previous section and [Annex C](#).
93. We would not necessarily expect the volume numbers (either absolute or relative splits) to be the same for the following reasons. Parties' win/loss records may be incomplete or erroneous. Parties have not provided an explanation of how they measure volumes won/lost, and their definitions of volumes won/lost could well be different from our definition (we measure win/loss as an estimated annual sales volume won/lost). There might also be differences in the definition of wins and losses. Parties attempt to record wins/losses to all the importers in GB, whereas we have data only on three importers ([REDACTED]), so our analysis will not capture switches to importers other than the three in our data. In addition, there might have been errors

in the parties' transactions data, or, as we have acknowledged, the difficulty of the matching exercise might have resulted in errors in our collated data set.

94. However, our sensitivity checks in [Annex A](#) show that there is a quite substantial overlap between our data set and the parties' win/loss records. We are able to match the switching events and the identity of the competitor successfully between the two data sets on average 72 per cent of the time.²⁰ The volumes associated with the switching events were not always matched, probably for the reasons outlined in the previous paragraph.
95. Hanson told us that the CC identified only around 72 per cent overlap while the fact that the parties' win/loss records were recognized to have significant shortcomings indicated that the level of transparency necessary for coordination was absent. We note that an overlap of 72 per cent is high, given the possible errors and omissions in both data sets. As we note in our sensitivity analysis in [Annex A](#), out of all Hanson's unmatched records, 5 per cent of them were due to differences in the switching definition, 6 per cent of them were related to collected sales and 4 per cent of them were not found in the transaction data. It is only the remaining unmatched records that are likely to be due either to errors in our data creation process or to errors in Hanson's win/loss records. Overall, all this evidence in combination suggests that the level of transparency is in fact high.
96. When we compare the parties' win/loss records ([Annex C](#), Tables 1 to 10) with the wins and losses in our data ([Annex C](#), Tables 11 to 21), we indeed observe differences between the volume numbers provided by the parties and the numbers we obtained from our data set (both absolute and relative splits). Nevertheless, we can compare the trends that emerge from the two data sets. In what follows we outline the trends we observe comparing the two data sets.
97. [REDACTED]
98. [REDACTED]
99. [REDACTED]
100. Overall, we see that although the parties' win/loss records and our switching data do not give the same switching volumes either in absolute values or percentages (due to the reasons outlined earlier), both data sets give similar patterns. When we compare the relative switching across competitors between the two data sets we see that the two data sets pick up similar trends in the switching behaviour of [REDACTED], [REDACTED] and [REDACTED].

²⁰ The only exception to this was Cemex, where only [REDACTED] per cent of Cemex's win/loss records were matched to our collated switching data. However, [REDACTED].

Sensitivity to definition of switching

1. We carried out a sensitivity analysis with respect to our approach to identifying wins and losses in the matched transaction data in the following way:
 - (a) The original criteria required at least three months of supply before and after the event—we reduced this to two months.
 - (b) In the original criteria, periods of supply before and after the event were allowed to have gaps of up to two months—we increased this to three months.
 - (c) Thus we ‘relax’ our criteria for identifying wins and loss—we identify as switches more of the short-term switches (eg switches for less than three months) and more ‘patchy’ switches.
2. Table 1 below summarizes the increase in the number of win/loss events identified, and an estimate of additional win/loss value (in terms of volumes) identified. The value of additional switches identified is likely to be an overestimation, because the additional wins/losses we identify are short-term and/or patchy therefore annual estimated value of the customer is likely to be overstated (as we multiplied the average monthly volumes by 12 to arrive at the estimates of annualized values of switches).
3. We identify about 18 per cent more wins and losses than before, although this varies slightly across suppliers. In terms of value, we identify at most 13 per cent more switching—again, this varies across suppliers. This indicates that the additional switches we identify are likely to be smaller than the ones we identified using our original criteria.

TABLE 1 Additional wins and losses identified

Win from	Value of the additional wins/losses identified				Number of additional events identified			
	Wins kt	Wins %	Losses kt	Losses %	Wins kt	Wins %	Losses kt	Losses %
Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[Importer X]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[Importer Y]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[Importer Z]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers’ transaction data.

Switching definition—cross-checking with cement suppliers’ win/loss data

4. We used the parties’ win/loss records submitted to us to cross-check our data. We examined whether the switching events identified by our collated data set match those recorded by the parties. For the cross-checks, we selected one year of data from each supplier. We used [REDACTED] and [REDACTED]. In so far as possible, we considered only switches of delivered bulk cement customers in order to ensure comparability to our data set.

5. [REDACTED]

6. [REDACTED]

Tables and charts for the customer switching analysis

Monthly wins and losses by supplier

- Figures 1 to 5 show monthly wins and losses by supplier (for GB cement producers), as a proportion of total sales. Lafarge Tarmac told us that some of the figures and tables below did not use an appropriate benchmark when comparing switching levels to sales levels, because some of the figures compared external bulk customer wins with total (ie internal and external) bulk cement sales, and also because some of the tables compared wins of bulk cement independent customers with total cement bulk sales (including both internal and external sales). We chose as a benchmark total bulk cement sales because this will provide an indication of the amount of wins and losses relative to the total sales of GB producers, and also because this enables comparison of the levels across different types of customers and different producers.

FIGURE 1

Monthly wins and losses of all external customers as a proportion of total monthly sales volumes: Lafarge

[✂]

Source: [✂]

Note: [✂]

FIGURE 2

Monthly wins and losses of all external customers (excluding Hanson internalization) as a proportion of total monthly sales volumes: Lafarge

[✂]

Source: [✂]

Note: [✂]

FIGURE 3

Monthly wins and losses of all external customers as a proportion of total monthly sales volumes: Hanson

[✂]

Source: [✂]

Note: [✂]

FIGURE 4

Monthly wins and losses of all external customers as a proportion of total monthly sales volumes: Cemex

[✂]

Source: [✂]

Note: [✂]

FIGURE 5

Monthly wins and losses of all external customers as a proportion of total monthly sales volumes: Tarmac

[REDACTED]

Source: [REDACTED]

Switching across the entire period

- Tables 1 to 10 summarize the data on the overall levels of switching for the entire period 2007 to 2011 both in terms of number of switching events and in terms of volumes of switching as a proportion of total sales.

Total number of win events

TABLE 1 Wins of all external customers (majors and independents) from 2007 to 2011

Win from	Winner								
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]	Total
Lafarge	-	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Hanson	[REDACTED]	-	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Cemex	[REDACTED]	[REDACTED]	-	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	-	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	-	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[Importer X]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	-	[REDACTED]	[REDACTED]	[REDACTED]
[Importer Y]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	-	[REDACTED]	[REDACTED]
[Importer Z]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	-	[REDACTED]
All wins	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

TABLE 2 Wins of independent customers from 2007 to 2011

Win from	Winner								
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]	Total
Lafarge	-	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Hanson	[REDACTED]	-	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Cemex	[REDACTED]	[REDACTED]	-	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	-	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	-	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[Importer X]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	-	[REDACTED]	[REDACTED]	[REDACTED]
[Importer Y]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	-	[REDACTED]	[REDACTED]
[Importer Z]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	-	[REDACTED]
All wins	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Total number of loss events

TABLE 3 Losses of all external customers (majors and independents) from 2007 to 2011

Switch to	Loss by								
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]	Total
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All losses	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

TABLE 4 Losses of independent customers from 2007 to 2011

Switch to	Loss by								
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]	Total
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All losses	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

Overall levels of switching—volumes won

3. Table 5 shows volumes won in absolute levels, and Tables 6 and 7 show wins relative to total sales.

TABLE 5 Wins of all external customers from 2008 to 2010, absolute levels

Win from	Winner									kt
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]		
Lafarge	-	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	
Hanson	[X]	-	[X]	[X]	[X]	[X]	[X]	[X]	[X]	
Cemex	[X]	[X]	-	[X]	[X]	[X]	[X]	[X]	[X]	
Tarmac	[X]	[X]	[X]	-	[X]	[X]	[X]	[X]	[X]	
Aggregate Industries	[X]	[X]	[X]	[X]	-	[X]	[X]	[X]	[X]	
[Importer X]	[X]	[X]	[X]	[X]	[X]	-	[X]	[X]	[X]	
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	-	[X]	[X]	
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	-	[X]	
All wins	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	

Source: CC analysis of cement suppliers' transaction data.

TABLE 6 Wins of all external customers (majors and independents) from 2007 to 2011 as a proportion of total cement sales volumes (external and internal)

Win from	Winner								
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]	Total
Lafarge	-	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	-	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	-	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	-	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	-	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	-	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	-	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	-	[X]
All wins	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

TABLE 7 Wins of independent customers from 2007 to 2011 as a proportion of total cement sales volumes (external and internal)

Win from	Winner								
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]	Total
Lafarge	-	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	-	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	-	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	-	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	-	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	-	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	-	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	-	[X]
All wins	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

Overall levels of switching—volumes lost

4. Table 8 shows volumes lost in absolute levels, and Tables x to y show losses relative to total sales.

TABLE 8 Losses of all external customers from 2008 to 2010, absolute levels

Switch to	Loss by								
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]	kt
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All losses	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

TABLE 9 Losses of all external customers (majors and independents) from 2007 to 2011 as a proportion of total cement sales volumes (external and internal)

Switch to	Loss by								Total
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]	
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All losses	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

Note: Lafarge's losses include volumes repatriated by Hanson.

TABLE 10 Losses of independent customers from 2007 to 2011 as a proportion of total cement sales volumes (external and internal)

Switch to	Loss by								Total
	Lafarge	Hanson	Cemex	Tarmac	Aggregate Industries	[Importer X]	[Importer Y]	[Importer Z]	
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All losses	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

Annual levels of switching

5. Table 11 shows total (external and internal) sales volumes of delivered bulk cement for each supplier in our data. We have used these figures in our calculations of relative win/loss volumes.

TABLE 11 Total sales volumes (external and internal) of delivered bulk cement by supplier and year

	kt						
	2007	2008	2009	2010	2011	2008–2010	2007–2011
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

6. Tables 12 to 18 summarize the overall levels of switching by year.

TABLE 12 Losses of all external customers (majors and independents) as a proportion of total cement sales volumes

Losses by	per cent						
	2007	2008	2009	2010	2011	2008–2010	2007–2011
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All	4.7	20.9	17.0	5.6	5.1	15.0	11.2

Source: CC analysis of cement suppliers' transaction data.

Note: Lafarge's losses in 2008 reflect Hanson internalization (as it appears as a switch in our data in December 2008).

TABLE 13 Losses of independent customers as a proportion of total cement sales volumes

Losses by	per cent						
	2007	2008	2009	2010	2011	2008–2010	2007–2011
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All	1.2	3.4	6.7	2.4	2.8	4.1	3.3

Source: CC analysis of cement suppliers' transaction data.

TABLE 14 Wins of all external customers (majors and independents) as a proportion of total cement sales volumes

Winner	per cent						
	2007	2008	2009	2010	2011	2008–2010	2007–2011
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All	4.1	6.6	13.7	5.8	4.3	8.5	6.9

Source: CC analysis of cement suppliers' transaction data.

Note: Losses of external customers include losses due to internalization but they will not show up as wins

TABLE 15 Wins of independent customers as a proportion of total cement sales volumes

Winner	per cent						
	2007	2008	2009	2010	2011	2008–2010	2007–2011
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All	1.4	3.2	6.6	2.7	2.9	4.0	3.3

Source: CC analysis of cement suppliers' transaction data.

TABLE 16 Wins of Majors (Lafarge, Hanson, Cemex, Tarmac, Aggregate Industries) as a proportion of total cement sales volumes

Wins by	per cent						
	2007	2008	2009	2010	2011	2008–2010	2007–2011
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Y]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[Importer Z]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
All	2.7	3.4	7.2	3.1	1.4	4.4	3.6

Source: CC analysis of cement suppliers' transaction data.

Note: There is no switching of Majors to importers (except [X]).

TABLE 17 Internalizations by the five Majors (wins of own sites), volume

Wins by	kt						
	2007	2008	2009	2010	2011	2008–2010	2007–2011
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

TABLE 18 Internalizations by the five Majors (wins of own sites), volumes as a proportion of total sales volume

Wins by	per cent						
	2007	2008	2009	2010	2011	2008–2010	2007–2011
Lafarge	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Aggregate Industries	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of cement suppliers' transaction data.

Analysis of certain cement suppliers' win and loss records

Cement suppliers' win and loss records

1. Tables 1 to 10 summarize the win/loss records data we received from certain cement suppliers.

[REDACTED]

TABLE 1 [REDACTED] wins in win/loss records, all external customers

	2007	2008	2009	2010	2011	2007–2011
Wins (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which other	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: [REDACTED] win/loss records.

TABLE 2 [REDACTED] wins in win/loss records, independent customers

	2007	2008	2009	2010	2011	2007–2011
Wins (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which other	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: [REDACTED] win/loss records.

TABLE 3 [REDACTED] losses in win/loss records, all external customers

	2007	2008	2009	2010	2011	2007–2011
Losses (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which other	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: [REDACTED] win/loss records.

TABLE 4 [REDACTED] losses in win/loss records, independent customers

	2007	2008	2009	2010	2011	2007–2011
Losses (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which other	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: [REDACTED] win/loss records.

[REDACTED]

TABLE 5 [REDACTED] wins in win/loss records, all external customers

	2009	2010	2011	2012	2007–2011
Wins (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which other	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: [REDACTED] win/loss records.

TABLE 6 [REDACTED] wins in win/loss records, independent customers

	2009	2010	2011	2012	2007–2011
Wins (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which other	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: [REDACTED] win/loss records.

TABLE 7 [REDACTED] losses in win/loss records, all external customers

	2009	2010	2011	2012	2007–2011
Losses (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which other	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: [REDACTED] win/loss records.

TABLE 8 [REDACTED] losses in win/loss records, independent customers

	2009	2010	2011	2012	2007-2011
Losses (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which other	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: [REDACTED] win/loss records

[REDACTED]

TABLE 9 [REDACTED] wins in win/loss records for 2007, all external customers

	2007
Wins (tonnes)	[REDACTED]
Of which Lafarge	[REDACTED]
Of which Hanson	[REDACTED]
Of which Tarmac	[REDACTED]
Of which Aggregate Industries	[REDACTED]
Of which importers	[REDACTED]
Of which other	[REDACTED]

Source: [REDACTED] win/loss records.

TABLE 10 [REDACTED] wins in win/loss records for 2007, independent customers

	2007
Losses (tonnes)	[REDACTED]
Of which Lafarge	[REDACTED]
Of which Hanson	[REDACTED]
Of which Tarmac	[REDACTED]
Of which Aggregate Industries	[REDACTED]
Of which importers	[REDACTED]
Of which other	[REDACTED]

Source: [REDACTED] win/loss records

Cement suppliers' wins and losses in our data set

- Tables 11 to 22 summarize the wins and losses in our data set for those cement suppliers which also provided us with their own win/loss data.



TABLE 11 [REDACTED] wins in our data set, all external customers

	2007	2008	2009	2010	2011	2007–2011
Wins (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].

TABLE 12 [REDACTED] wins in our data set, independent customers

	2007	2008	2009	2010	2011	2007–2011
Wins (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].

TABLE 13 [REDACTED] losses in our data set, all external customers

	2007	2008	2009	2010	2011	2007–2011
Losses (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].

TABLE 14 [REDACTED] losses in our dataset, independent customers

	2007	2008	2009	2010	2011	2007–2011
Losses (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].



TABLE 15 [REDACTED] wins in our data set, all external customers

	2007	2008	2009	2010	2011	2007–2011
Wins (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].

TABLE 16 [REDACTED] wins in our data set, independent customers

	2007	2008	2009	2010	2011	2007–2011
Wins (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].

TABLE 17 [REDACTED] losses in our data set, all external customers

	2007	2008	2009	2010	2011	2007–2011
Losses (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].

TABLE 18 [REDACTED] losses in our data set, independent customers

	2007	2008	2009	2010	2011	2007–2011
Losses (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Cemex	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].



TABLE 19 [REDACTED] wins in our data set, all external customers

	2007	2008	2009	2010	2011	2007–2011
Wins (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].

TABLE 20 [REDACTED] wins in our data set, independent customers

	2007	2008	2009	2010	2011	2007–2011
Wins (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].

TABLE 21 [REDACTED] losses in our data set, all external customers

	2007	2008	2009	2010	2011	2007–2011
Losses (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].

TABLE 22 [REDACTED] losses in our data set, independent customers

	2007	2008	2009	2010	2011	2007–2011
Losses (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Lafarge	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Hanson	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Tarmac	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which Aggregate Industries	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which the 3 importers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of cement suppliers' transaction data.

Note: The '3 importers' refers to the three importers for which we have data, ie [REDACTED].

Analysis of Hanson's submission on defended volumes

1. Hanson submitted to us information on threats to switch by its cement customers. In this annex we describe and analyse this information.
2. Our analysis of Hanson's information on threats to switch shows that the Majors seem to have been more successful in challenging Hanson's top customers than importers over the last two years. [REDACTED] appears to be the main challenger among Majors, while [REDACTED] appears to be the main challenger among importers. In order to defend volumes over the last two years, Hanson told us that it had to reduce prices, fix prices for longer periods and/or defer announced price increases. Our analysis of the extent to which prices reduced in order to defend volumes showed that the price impact was not very large, although this analysis is limited by lack of data. Our analysis is also limited by the fact that Hanson's information on threats to switch covers only its top customers who are more likely to be challenged by Majors as opposed to importers due to capacity issues and thus any observed pattern cannot be easily generalized. In addition, we expect that the information collected by sales staff may overestimate the degree of pressure exercised on customers.

Hanson's information

3. Hanson told us that threats of switching by customers represented a very significant demonstration of competition and the exercise of bargaining power by customers. It told us that customers used the threat of switching to resist proposed price increases, secure lower prices and/or to secure better deals generally (eg better credit terms, guarantees of no future price increases for a specified period) and that this was driven by the availability of competing offers to customers.
4. Hanson provided us with information on the threats to switch by its cement customers. This information consisted of case studies of threats to switch for its top ten customers in the RMX and concrete products segments for 2011, ranked by volumes sold. Hanson said that these cases represented some of the principal instances of recent competitor threats to these customers.
5. Hanson told us that this information had been prepared on the basis of interviews with Hanson Cement's sales staff which covered recent (2011/12) competitor threats Hanson had faced in respect of its top ten customers in each category and Hanson's response to the threats.
6. Hanson said that it had focused this exercise on the top ten customers by two key segments for the purposes of easing the administration burden and that the same picture would emerge if the exercise were extended to medium-sized and smaller customers. According to Hanson, the sales people involved in this exercise said that they had faced significant competitor pressure for small and medium customers as well. By way of example, [REDACTED] (classified as medium customers) were noted as customers where Hanson had faced competition from [REDACTED] leading to Hanson having to reduce its prices by between £[REDACTED] and £[REDACTED] per tonne (which took Hanson back to [REDACTED] prices).²¹

²¹ Hanson noted that it would be happy to extend the exercise across all or any customer size segments and provide further details on the precise tonnages involved and specific financial impacts by customer.

Hanson's case studies

7. Hanson collected information on the most recent cases of threats to switch by its top ten cement customers both in the RMX segment and the concrete products segment. These case studies covered the period 2011/12. For every case where its customers were challenged by a competitor over the last two years, Hanson provided information on which competitor challenged its customers and which methods Hanson employed to defend its volumes. In what follows we summarize this information.
8. Hanson's top ten customers in the RMX segment ranked by volumes sold in 2011 were [REDACTED]. Its top ten customers in the concrete products segment ranked by volumes sold in 2011 were [REDACTED]. These customers represent 27 per cent of Hanson's total sales for 2011.²²

Challengers

9. Over the last few years Hanson has lost some of the business of its top customers both in the RMX and concrete products sectors to both importers and Majors.²³
10. Hanson explained that it lost approximately one-quarter to one-third of its business with [REDACTED] (Hanson's top customer in the RMX sector) in 2012 to [REDACTED]. Hanson also told us that in 2010 it lost 25 per cent of its business with [REDACTED] (Hanson's second biggest customer in the concrete products sector) to [REDACTED].
11. During the same period Hanson also lost volumes (either the entire business with a customer or part of its business) to Majors. Table 1 below summarizes these instances. We see that in most cases Hanson lost customers (or part of its business with these customers) to [REDACTED], in fewer cases to [REDACTED] and then in fewer cases again to [REDACTED].

TABLE 1 Hanson's losses of top customers to Majors, 2009 to 2012

Year	Customer	Lost to	Sector	Loss
2011	[REDACTED]	[REDACTED]	RMX	All of this business for four months
2012	[REDACTED]	[REDACTED]	RMX	A significant proportion of this business (2012 to date)
2012	[REDACTED]	[REDACTED]	RMX	One of this customer's key RMX sites
2011/12	[REDACTED]	[REDACTED]	RMX	Approximately 40% of this business
2009	[REDACTED]	[REDACTED]	RMX	All of this account
2010	[REDACTED]	[REDACTED]	CP*	All of this account
2012	[REDACTED]	[REDACTED]	CP	All of this account

Source: Hanson.

*Concrete products.

12. On other occasions during the same period, Hanson succeeded in defending volumes that were challenged by both importers and Majors.
13. Hanson's analysis shows that the importers which challenged its top customers over the period 2011/12 were [REDACTED] and [REDACTED]. Hanson noted that on three occasions, [REDACTED] import terminal in [REDACTED] and its [REDACTED] were a new source of threat. Hanson said that [REDACTED] was able to challenge customers due to its ability to [REDACTED]. Table 2 summarizes the number of challenges each importer attempted against Hanson's customers. The

²² Calculation made using Hanson's transactions data.

²³ Although Hanson's analysis focused on cases during the last two years, it also referred sometimes to instances in which it lost customers before 2011 in order to explain its attempts to win back these customers in subsequent years.

same customer might have been approached by more than one importer at a time and in some cases Hanson was not sure about the identity of the importer. Overall, it seems that, among importers, [REDACTED] has been the main challenger during 2011/12. [REDACTED] and [REDACTED] also appear to have challenged Hanson's top customers relatively frequently.

TABLE 2 Number of challenges to Hanson's top customers by importer, 2011/12

Importer	Number of challenges	
	RMX sector	CP sector
[REDACTED]	6	3
[REDACTED]	1	-
[REDACTED]	2	2
[REDACTED]	3	-
[REDACTED]	2	-
[REDACTED]	1	1
[REDACTED]	-	1

Source: Hanson.

14. Hanson's customers were also challenged by Lafarge, Cemex and Tarmac during the same period. Table 3 summarizes the number of challenges each Major attempted against Hanson's customers. Although in the RMX sector [REDACTED] appears to have challenged Hanson's customers fewer times than [REDACTED], if the number of challenges in the concrete products sector as well as the losses Hanson incurred to [REDACTED] that were described earlier are also taken into account, it seems that [REDACTED] has been the main challenger of Hanson's customers among the Majors. [REDACTED] follows immediately after in terms of frequency of challenges and [REDACTED] appears to have challenged Hanson's top customers the least frequently.

TABLE 3 Number of challenges to Hanson's top customers by Major, 2010 to 2012

Major	Number of challenges	
	RMX sector	CP sector
[REDACTED]	1	4
[REDACTED]	2	2
[REDACTED]	1	-

Source: Hanson.

Hanson's response to challenges

15. Hanson also described the ways in which it tried to defend these volumes, although it did not provide an explanation for every case of threat to switch that it had recorded. The main ways Hanson defended volumes from both importers and Majors were by decreasing prices, fixing prices for long periods and/or deferring announced price increases.
16. Table 4 summarizes the different ways in which Hanson defended its customers from importers, for those cases where Hanson provided some information.

TABLE 4 Price reductions to defend customers from importers' threats, 2011/12

Customer	Importer(s)	Sector	Price-related defence mechanism
[REDACTED]	[REDACTED]	RMX	[REDACTED]
[REDACTED]*	[REDACTED]	RMX	[REDACTED]
[REDACTED]	[REDACTED]	RMX	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]

Source: Hanson.

*Hanson expects to be obliged to implement further reductions.

17. Table 5 summarizes the ways in which Hanson defended its customers from the Majors for the cases where Hanson provided some information.

TABLE 5 Price reductions to defend customers from Majors' threats, 2011/12

Customer	Major	Sector	Price-related defence mechanism
[REDACTED]	[REDACTED]	RMX	[REDACTED]
[REDACTED]	[REDACTED]	RMX	[REDACTED]
[REDACTED]	[REDACTED]	RMX	[REDACTED]
[REDACTED]	[REDACTED]	RMX	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]
[REDACTED]	[REDACTED]	CP	[REDACTED]

Source: Hanson.

Comparison between challenges from importers and Majors

18. From the above analysis we see that the Majors have been more successful in challenging Hanson's top customers in that more challenges by Majors resulted in a loss than by importers. Among the importers, [REDACTED] appears to be the main challenger followed by [REDACTED] and [REDACTED], while among Majors the main challenger was [REDACTED] followed by [REDACTED] and [REDACTED].
19. Regarding the price reductions, from Tables 4 and 5 above we see that in general Hanson has used similar ways to defend volumes that were challenged by either importers or Majors. We do not have information on the exact price reductions for every single case of challenge so we cannot directly compare the price reductions offered to customers challenged by importers and the price reductions offered to customers challenged by Majors. In addition, on some occasions (eg [REDACTED]) the same customer was challenged by both importers and Majors and so a price reduction was offered to address collectively the threats to those customers. Based on the price reductions that are recorded in Hanson's analysis, we see that the price reductions vary between £[REDACTED]/t and £[REDACTED]/t for importers and between £[REDACTED]/t and £[REDACTED]/t for Majors. So there is some overlap in the price reductions offered to customers after a challenge from either an importer or a Major but for some customers that were challenged by a Major the price reduction has been higher on some occasions.
20. Our analysis is, however, restricted by the fact that we only have information on switching events for Hanson's top customers in the RMX and concrete products segments. These customers are more likely to be challenged by the Majors than by

importers since the Majors have more capacity to serve larger customers. In addition, the information on switching events was collected by interviewing sales staff that covered the relevant period. Thus, it is possible that the data collected are subject to bias whereby sales staff would tend to exaggerate any pressure exercised on customers.

Average price reductions in the data

21. We tried to test the extent to which Hanson prices reduced after a threat to switch using Hanson's transaction data and comparing this to the reported price reduction in Hanson's information on threats to switch. Since we only have transaction data up to 2011 we could not do this for customers that threatened to switch in 2011. In addition, from Hanson's analysis, it is not always clear which was the exact point in the year that Hanson had to reduce prices in order to defend volumes. Given these limitations, we compared the 2010 price average to the 2011 price average for the customers that were challenged in 2011. There were four such customers.
22. Table 6 shows the results of this analysis. We see that in the case of one customer, the average price to this customer was higher by £[redacted]/t in the year after the challenge. In the case of the another customer there was almost no price change from one year to the other, while for [redacted] and [redacted] we see that prices reduced after the threat to switch, but this reduction was by £[redacted]/tonne, smaller than the price Hanson reported in either case. Overall we see that the impact on prices was not very large, although we acknowledge the limitations of this exercise.

TABLE 6 Average prices by customer

Customer	[redacted]	[redacted]	[redacted]	[redacted]
Average price in 2010 (£/t)	[redacted]	[redacted]	[redacted]	[redacted]
Average price in 2011 (£/t)	[redacted]	[redacted]	[redacted]	[redacted]
Difference in price (2011–2010) (£/t)	[redacted]	[redacted]	[redacted]	[redacted]

Source: Hanson transaction data.

Analysis of month-by-month changes in shares of sales of cement made by GB producers

1. Figures 1 to 4 show the changes in monthly share of sales of cement of Lafarge, Cemex, Hanson and Tarmac out of total sales of cement by the GB producers. The first observation is that changes in monthly share of sales are usually small, within plus or minus [X] percentage point [X], [X] and [X] shares of sales in most months, and within plus or minus [X] percentage points for [X] share of sales in most months.
2. We also observe that it is often the case that a month with an increase in share of sales is followed by a month with a reduction in share of sales, and vice versa. We also see that, in instances where there was a particularly large increase or decrease in share of sales in one month, the following month is also characterized by a particularly large change in share of sales in the opposite direction. This could be indicative of periods of deviations with subsequent retaliation.
3. Two time periods are particularly noticeable because of the larger changes in shares of sales observed:
 - (a) December 2010/January 2011. In December 2010, [X] share of sales made by the GB producers increases by [X] percentage points, while [X] share of sales reduces by [X] percentage points and [X] share of sales reduces by [X] percentage points. A month later, in January 2011, we see [X] share of sales increasing by [X] percentage points, [X] share of sales reducing by [X] percentage points and [X] share of sales remaining fairly stable ([X] per cent reduction). This suggests to us that [X] may have won large volumes from [X] in December 2010, only for [X] to then win back equivalent volumes from [X] the following months.
 - (b) The first half of 2009, where we see again the impact of the 2009 internalization. [X] loses a large amount of share of sales in January 2009 ([X] percentage points); it then takes several months for [X] to recover part of its share of sales ([X] percentage points over February to April 2009). Then, in May 2009, we see [X] regaining share of sales ([X] percentage points), both from [X] and [X] ([X] share of sales reduces by [X] percentage point in May 2009 and [X] share of sales reduces by [X] in May 2009), and in June 2009 we see the reverse ([X] and [X] each increase share of sales by [X] percentage point in June 2009 and [X] loses [X] percentage points share of sales in June 2009).
4. We also note that both of these time periods (first half of 2009, and Q1 2011) are generally characterized by high levels in price dispersion for [X], [X] and [X] on prices to external customers (see Appendix 7.8). This is consistent with these periods being possible periods of instability in any possible coordination. Indeed, because prices are individually negotiated, we expect that periods of punishment and deviations will have an impact mainly on shares of sales made by GB producers and on the degree of price dispersion. Any changes in average prices may be less noticeable because only the targeted customers may benefit from lower prices.

FIGURE 1

Lafarge: monthly changes in share of sales of cement made by GB producers



Source: CC based on Lafarge, Hanson, Tarmac and Cemex transaction data.

FIGURE 2

Cemex changes in share of sales of cement made by GB producers



Source: CC based on Lafarge, Hanson, Tarmac and Cemex data.

FIGURE 3

Hanson changes in share of sales of cement made by GB producers



Source: CC based on Lafarge, Hanson, Tarmac and Cemex data.

FIGURE 4

Tarmac changes in share of sales of cement made by GB producers



Source: CC based on Lafarge, Hanson, Tarmac and Cemex data.

5. Hanson told us that its analysis of its own market share estimates showed that there was significant volatility in Hanson's market share and an absence of punishing behaviour. In particular, Hanson highlighted two examples from 2011:
 - (a) Hanson suggested that its market share jumped between January and February 2011, and that there had been no competitor reaction to reverse this increase in March. We note that Figure 3 shows that there was a marked drop in Hanson's market share between December 2010 and January 2011; therefore the jump in share between January and February 2011 could be related to the reduction in Hanson's share in the previous month.
 - (b) Hanson told us that between May and June 2011 its market share jumped by as much as 2 per cent of the entire national cement market, and that if one looks at market shares right through until the end of 2011 there is no market correction whatsoever. We note that the increase in market share highlighted by Hanson was preceded by a dip in Hanson's market share.
6. Moreover, Hanson provided several examples of changes in its market shares between 2005 and 2010. We do not have data to evaluate submissions regarding how Hanson's market shares evolved prior to 2007. Hanson's examples of changes in market shares between 2007 and 2010 included the following:
 - (a) Hanson told us that it increased its market share from April to May 2010, yet looking at the next five months of trading there was no reversal of this gain and Hanson argued that therefore there had been no punishment action to reverse

the April gain. We note that the increase in market share highlighted by Hanson was actually preceded by a dip in Hanson's market share, in other words the increase in its market share from April to May 2010 could be a consequence of the reduction in the previous months.

- (b) Hanson told us that it lost 1 per cent of the national market between January and February 2009, and that if one looks at a full year of trading to the end of 2009 the figures do not show any kind of win back by Hanson or reversal of loss. This, Hanson told us, was not consistent with a punishment to win back and correct shares. We note that Figure 3 shows that Hanson had gained considerable market share between December 2008 and January 2009.
 - (c) Hanson told us that it gained market share in excess of 1 per cent between August and September 2008, and that October and November did not show a reversal of this gain. We note that Hanson's market share had, except for one month, been declining in the months prior to the increase between August and September 2008.
 - (d) Hanson told us that it lost nearly 1 per cent of market share between January and February 2008, and that it did not regain share until September the same year. Hanson suggested that this contradicted a mode of competition based on monitoring of monthly market shares and quick punishment actions occurring to rebalance shares. We note that Figure 3 shows that in the two months leading up to the loss in market share highlighted by Hanson, Hanson had been gaining market share.
 - (e) Hanson told us that it gained nearly 2 per cent of the market between September and October 2008, yet in January 2008 its market share was still the same as after the October gain. In Hanson's view, there had thus been no punishment reaction by competitors. We note that Figure 3 shows that Hanson's share had dipped considerably in the two months leading up to the increase in market share highlighted by Hanson.
 - (f) Hanson told us that it had lost almost 2 per cent of market share between February and March 2007, yet three months later its market share was exactly the same. Hanson told us this showed that it had not swiftly reacted to regain market share and that this was inconsistent with monthly monitoring of market shares and swift actions to regain market share. We note that three months after the event highlighted by Hanson, ie in June 2007, its market was rising, and that the June market share represented an increase relative to Hanson's market share in May.
7. In the light of the above, we consider that Hanson's observations are consistent with a continuous rebalancing of market shares between the GB cement producers.
8. Hanson told us, in its response to provisional findings, that the common movements in monthly market shares across the years reflect the successes and failures of the continuum of business wins and losses and the results of a combination of different business strategies in place from time to time, and that market share movements were not driven by the continual rebalancing of market shares.¹ Whilst we agree that the analysis of monthly market shares does not necessarily imply a mechanism in place to rebalance market shares, we consider it to be evidence which shows that the outcomes are consistent with rebalancing of market shares. We considered this

¹ [Hanson response to provisional findings](#), paragraph 8.25.

evidence along with other evidence (such as internal documentary evidence) in forming our view on whether there is a mechanism to rebalance market shares in Section 8.

9. Hanson provided two examples of changes in its market share in 2012. We did not require monthly data on market shares for 2012 in order not to increase the burden on the Parties.
10. In its response to the provisional findings (paragraph 8.36 to 8.38 and Annex 3), Hanson submitted that, the CC's test is fundamentally flawed and biased to accepting the null hypothesis that market shares are coordinated. Hanson submitted that if there were evidence of rebalancing, market shares should revert to their trend value over time, whereas if there were no evidence of rebalancing the market shares would follow a random walk. Hanson tested this hypothesis using the augmented Dickey-Fuller procedure, and found that there was no evidence of market share rebalancing, and it was not able to reject the hypothesis that market shares followed a random walk. We do not agree with the premise of the exercise. We do not agree with Hanson that, if there were competition, market shares would follow a random walk: as set out in [paragraph before 8.18], under competition, we would expect customers to switch to the more competitive supplier over time, as a result of which we would not expect market shares to follow a random walk but rather to increase or decrease for sustained periods of time reflecting the relative efficiencies of the suppliers. In addition, we note that not rejecting a hypothesis does not mean that the hypothesis is correct; in particular given the small sample size for Hanson's test which was based on 17 observations. In other words, the fact that the test was not able to reject the hypothesis that market shares follow a random walk does not imply that market shares follow a random walk.
11. Cemex told us, in its response to our provisional findings,² that there was evidence of persistence in the changes in monthly relative shares. Cemex submitted that its relative share largely decreased between January 2009 and December 2009 (from [%]), that Hanson's share had decreased by [%] between May 2009 and April 2010, and that Lafarge's share had increased between December 2010 and October 2011 (from [%] to [%]). Cemex submitted that persistent changes in share on a monthly basis over a protracted period of time was not consistent with coordination around market shares.
12. We did not agree with Cemex that there was evidence in persistence in the changes in monthly relative shares. Regarding the first example, we noted that January 2009 was a month where Cemex's share had increased; its share in December 2008 was [%] and its share in February 2009 was [%]. Therefore, the data showed that, rather than any persistence in market shares, there had been an increase in Cemex share in January 2009, which was quickly followed by a reduction in Cemex share, and over the period February 2009 to December 2009, Cemex monthly share had in fact remained stable. Again, with regard to the Hanson example, we noted that in May 2009 Hanson share had increased by [%] percentage points compared with the previous month, to then reduce by [%] percentage points in the following month. In other words, the downward trend that Cemex referred to was entirely due to Cemex choosing a month with a large spike in market share as a reference point. When looking at the period between April 2009 and April 2010, there was in fact stability in Hanson relative share. With regard to the Lafarge example, we noted again that the month that Cemex had chosen as a reference point (October 2011) was characterized by a spike in Lafarge's share—in the following month, Lafarge share

² [Cemex response to provisional findings](#), paragraph 4.10.

returned to [redacted] ie a level similar to that in December 2010. Overall, therefore, we did not agree with Cemex submission that the data showed persistent in changes in monthly relative shares, and rather the examples Cemex chose showed that any increases or reductions in market shares in one month were quickly cancelled out by changes in the following month in the opposite direction—ie rebalancing.

13. We also calculated the own correlation in share of sales changes of each GB cement producer. So, for instance, for [redacted], we calculated the correlation between changes in [redacted] share of sales made by the GB producers in Month t, and changes in [redacted] share of sales made by the GB producers in the following month, over the period January 2007 to December 2011. If there is coordination on share of sales made by the GB cement producers, we expect these correlation coefficients to be negative (indicating that an increase in share in one month is followed by a reduction in the following month). Coefficients close to -1 would indicate that recovery is full and takes place in the month immediately following any loss or increase in share of sales; however, we would not necessarily expect this to be the case as we would expect that it may take more than one month for a cement producer fully to recover share of sales following a deviation. Therefore, we also calculated the correlation between change in share of sales in a given month and the total change in the following two months. Moreover, there are some underlying trends in shares of sales made by the GB producers over time ([redacted] reduction and [redacted] increase) which will influence the correlation coefficients.
14. The results are summarized in Table 1. We have also checked whether the results are statistically significant at the 95 and 99 per cent level, and have marked the results accordingly.³

TABLE 1 Auto-correlation in changes of shares of sales made by GB producers—monthly basis

	<i>Cemex</i>	<i>Hanson</i>	<i>Lafarge</i>	<i>Tarmac</i>
Correlation between change in share of sale in Month t and change in following month	[redacted]*	[redacted]*	[redacted]	[redacted]
Correlation between change in share of sales in Month t and sum of change in share of sales in two months following	[redacted]*	[redacted]*	[redacted]*	[redacted]

Source: GB cement producers and CC analysis.

*Significant at 99 per cent level.

Notes:

1. Based on share of sales of all cement by GB producers in GB (ie not including imports). Monthly shares from January 2007 to December 2011 (58 observations for the lagged correlation coefficients).
2. $n=59$, $df=57$ in the case of correlation between change in share of sales in Month t and change in following month; $n=58$, $df=56$ in the case of correlation between change in share of sale in month t and sum of change in share of sale in two following months.

³ We looked up the significance thresholds in a standard statistics book (G M Clarke and D Cooke, *A Basic Course in Statistics*, p359). We calculated the significance levels for 57 and 56 degrees of freedom by linearly interpolating between the results for 50 and 60 degrees of freedom. We obtained thresholds of -25.7 and -33.4 per cent at 95 and 99 per cent significance levels respectively where there are 57 degrees of freedom, and -25.9 and -33.7 per cent at 95 and 99 per cent significance levels respectively where there are 56 degrees of freedom.

Analysis of cement price announcements

1. This appendix sets out our analysis of the GB producers' price announcement letters. We look at when letters were sent, how large the announced increases were and to what extent announced increases have translated into actual increases.

Price announcements letters

2. We received the following data on price announcements letters for grey cement from the four GB cement producers:

<i>Company</i>	<i>Data</i>	<i>Dates covered</i>	<i>Product coverage</i>
Lafarge	Date of letter, date of increase and magnitude of increase	From Mar 2003	Bagged and bulk cement
Tarmac	Date of letter, date of increase and magnitude of increase	From Jan 2006	Bagged and bulk cement
Hanson	Date of letter, date of increase and magnitude of increase	From Jan 2006	Bagged and bulk cement
Cemex	Date of letter, date of increase and magnitude of increase	From Jan 2006	Bagged and bulk cement

3. Table 1 shows when letters were sent, when price increases became effective and the announced price increases.

TABLE 1 Bulk CEM I price increase announcements

<i>Date of price increase</i>	<i>Date of announcement</i>	<i>Supplier</i>	<i>Price increase</i>
1 Jan 06	23 Sep 05	Lafarge	£6.45
	18 Oct 05	Cemex	£6.45
	24 Oct 05	Tarmac	£6.50
	1 Nov 05	Hanson	£6.50
1 Jan 07	25 Aug 06	Lafarge	£8.35 or 8.75 depending on product
	21 Sep 06	Hanson	£8.50 or £9.40 depending on product
	16 Oct 06	Tarmac	£8.50
	16 Oct 06	Cemex	£8.15 or £9.25 depending on product
1 Jan 08	7 Sep 07	Lafarge	£7.20 or £7.60 depending on product
	12 Sep 07	Hanson	£7.35 or £8.00 depending on product
	24 Oct 07	Tarmac	£7.45
	26 Oct 07	Cemex	£8.85 or £9.95 depending on product
1 Aug 08	25 Jun 08	Hanson	£3.40
	25 Jun 08	Cemex	£3.75 or £4.00 depending on product
	26 Jun 08	Lafarge	£3.53 or £3.91 depending on product
	30 Jun 08	Tarmac	£3.70
1 Oct 08	21 Aug 08	Cemex	£3.50 or £3.75 depending on product
1 Jan 09	1 Oct 08	Lafarge	£16.00
	23 Oct 08	Hanson	£17.20
	31 Oct 08	Cemex	£16.40 or £18.40 depending on product
	13 Nov 08	Tarmac	£15.75
1 Jan 10	27 Oct 09	Tarmac	£5.20
	27 Oct 09	Hanson	£5.80 or £6.20 depending on product
1 Mar 10	28 Oct 09	Cemex	£5.75 or £6.75 depending on product
	1 Dec 09	Lafarge	£4.75 or £5.50 depending on product
1 Jan 11	23 Sep 10	Lafarge	£6.75 or £7.50 depending on product
	7 Oct 10	Hanson	£7.10
	8 Oct 10	Cemex	£7.25 or £7.75 depending on product
	1 Nov 10	Tarmac	£7.00
1 Jan 12	30 Sep 11	Cemex	£8.75 or £9.25 depending on product
	18 Oct 11	Lafarge	£7.73 or £8.05 depending on product
	6 Nov 11	Hanson	£9.60 or £10.60 depending on product
	1 Dec 11	Tarmac	£8.15
1 Sep 12	17 Aug 12	Cemex	Number of supplementary charges introduced
1 Jan 13	19 Sep 12	Cemex	Introduction of a gross price list for all customers; rebates netted off gross price to arrive at a net-net price; plan for two price increases in 2013 (1 Apr and 1 Oct); fuel surcharge mechanism introduced

Source: Lafarge, Hanson, Cemex and Tarmac.

4. In terms of the rationale for sending out price increase letters, we were told by Hanson that it sent general price increase notifications to customers in order to attempt to recover cost increases (eg energy costs which had risen substantially in recent years). It also told us that the sending of price increase letters was a practice required by customers, since such letters allowed customers to prepare for their own budget considerations.
5. Lafarge told us that price announcement letters had typically been sent three months ahead of the date of the application of the increase because customers required this much advance notice in order to be able to plan for the price increases within their own businesses.
6. Tarmac told us that to the extent that there had been any correlation between the timing and the amounts of the price letters sent by the different cement producers, this could be explained by the need to respond to customer requests for their own

budgeting/costing purposes and to address increased input costs (which were common to all producers) annually or, in more exceptional circumstances, as they could no longer continue to be absorbed.

7. We have found some internal documents that discuss price announcement letters and the related strategy. Cemex, [REDACTED].¹ In a different document, Cemex [REDACTED].
8. We also found some references to price increase announcements for cement in a Lafarge internal document. [REDACTED]
9. [REDACTED]²
10. Going forwards, Cemex has introduced a number of significant changes to its pricing strategy from 1 January 2013. [REDACTED] Cemex told us that [REDACTED]. We note that the proposed change was very recent, and therefore at present it is not clear whether this change will be implemented in full, nor what effect it might have on the price announcement strategies of the other GB cement producers. Nonetheless, [REDACTED]. As such, it is not clear which of the following outcomes might result in the market:
 - (a) Cemex makes the proposed changes, and other GB cement producers do not make similar changes;
 - (b) Cemex makes the proposed changes, and other GB cement producers follow suit; or
 - (c) Cemex does not end up following through with its plans, as its customers threaten to switch, or actually do switch, to competitors, making changes unprofitable for Cemex.
11. Figures 1 and 2 illustrate GB cement producers' nominal and cumulative announced increases. If price increases were a little bit different on one particular date, the series in Figure 2 would not be aligned at all following dates, even if the increase was exactly the same thereafter. However, in that case, the series would be parallel to each other.

FIGURE 1

Announced increases in price of bulk CEM I (nominal)

[REDACTED]

Source: CC's calculations using the parties' price increase announcement letters.

FIGURE 2

Announced increases in price of bulk CEM I (cumulative)

[REDACTED]

Source: CC calculations using the parties' price increase announcement letters.

¹ [REDACTED] See also paragraph 10.

² Lafarge noted that the 1 August 2008 price increase announcement followed a large and unexpected increase in the price of coal, and increases in oil and sea freight costs. Lafarge stated that, as these were common costs to all UK cement producers, they would have affected all UK cement producers to a similar degree. Moreover, Lafarge told us that given the visible nature of the cost shocks over such a small time frame Lafarge's decision to introduce a price increase was not a surprise to Lafarge's cement customers, and consequently Lafarge considered that it was more successful in achieving price increases following its August 2008 increase than it was with other price increases.

Submissions from the GB cement producers on the comparison between announced price increases and actual price increases for cement

12. Lafarge told us that price increases detailed in letters were aspirational only and did not reflect actual prices implemented to individual customers. According to Lafarge, the eventual price agreed depended on the negotiations which followed the price increase announcement, with customers carrying out market testing to secure other offers and using these to optimize their outcome. The final agreement might include a delayed date of application, adjustments to the product supplied, price, volume, rebates, discounts, promotional assistance, delivery modes, credit terms, service level, etc.
13. Tarmac told us that announced price increases sometimes did not translate into actual price changes at all and, in some cases, the outcome of price negotiation after a price announcement letter had been reduction in prices.
14. Hanson told us that [REDACTED]. Hanson also told us that customers used the threat of switching to negotiate lower (or no) price increases.
15. In Cemex told us that the actual price agreed with a customer following a price increase announcement depended on a variety of factors, [REDACTED].
16. Cemex told us that there had been significant variation in the price increases that had been announced by the suppliers (for some types of cement more than for others). It also said that [REDACTED].

Analysis of announced versus realized prices

17. We analyse Lafarge's price increase announcements over the period 2007 to 2011. We requested that Lafarge's submitted transaction data be split into broad CEM I, CEM II, CEM III and CEM IV categories. We therefore compare the transaction data for CEM I with the price increase announcements for products CEM I 42,5N/52,5N, as these are predominantly the standard products (as opposed to rapid setting).³
18. Figure 3 shows the weighted average price for CEM I from Lafarge's transaction data alongside the implied price based on price increase letters for products 42,5N/52,5N for the three months immediately following each announced price increase. The figure shows that Lafarge [REDACTED].⁴

FIGURE 3

Announced and realized increases in price of bulk CEM I

[REDACTED]

Source: CC calculations using Lafarge's price increase announcement letters and transaction data.

19. In order to calculate the realized average price change, we take as a base period the month just before the increase was planned to become effective (eg December in the case of January price increases) and compare the average price in that month with

³ Lafarge told us that the CEM I category did not necessarily exclude all rapid-setting cements. If this is the case, our results on realized price increases may be biased upwards somewhat, as they may include price increases of some rapid-setting cements, which may have been subject to greater announced price increases. However, this need not be the case, as a greater announced price increase does not automatically imply a greater realized price increase.

⁴ Lafarge pointed out to us that its bulk cement prices for CEM I and CEM II fell in real terms between 2009 and 2011.

the one in the month in which the announced price increase became effective. Given that we expect that the price increases might not show immediately, we do the same analysis comparing the base month with each of the subsequent three months in turn (eg January, February and March in the case of January price increases). This allows us to see also how average prices across all sales change over time. The results are shown in Table 2.

TABLE 2 Lafarge price increase announcements—bulk CEM I

Month of announced price increase	Month of realized price increase	Announced price increase CEM I 42,5N/52,5N £/tonne	Average realized change CEM I £/tonne	Deviation from announced price £/tonne	Realized price increase %
Jan 08	Jan 08	7.20	[X]	[X]	[X]
	Feb 08		[X]	[X]	[X]
	Mar 08		[X]	[X]	[X]
Aug 08	Aug 08	3.53	[X]	[X]	[X]
	Sep 08		[X]	[X]	[X]
	Oct 08		[X]	[X]	[X]
Jan 09	Jan 09	16.00	[X]	[X]	[X]
	Feb 09		[X]	[X]	[X]
	Mar 09		[X]	[X]	[X]
Mar 10	Mar 10	4.75	[X]	[X]	[X]
	Apr 10		[X]	[X]	[X]
	May 10		[X]	[X]	[X]
Jan 11	Jan 11	6.75	[X]	[X]	[X]
	Feb 11		[X]	[X]	[X]
	Mar 11		[X]	[X]	[X]

Source: CC calculations using Lafarge data.

20. The data shows that Lafarge was able to increase the average price paid by customers following the 1 January 2008, 1 August 2008 and 1 January 2009 price increase announcements. Although Lafarge was not able to realize the full price increase, it did pass on between [X] and [X] within three months of the date from which the announced price increase applied. Lafarge was not able to pass on the 1 March 2010 price increase announcement, while it did pass on a low proportion of the 1 January 2011 price increase announcement.

Tarmac

21. We analyse Tarmac's price increase announcements over the period 2007 to 2011. Tarmac's transaction data is split into broad CEM I and CEM II categories. We compare the transaction data for CEM I with the price increase announcements, which apply to all bulk cement as this is the comparable product.
22. Figure 4 shows the weighted average price for CEM I from Tarmac's transaction data alongside the implied price based on price increase letters for the three months immediately following each announced price increase. The figure shows that Tarmac was able to realize significant proportions of the announced price increases in January 2008 and August 2008, while it was not able to realize a high proportion of the announced price increases in January 2009, January 2010 and January 2011. This pattern is broadly similar to that of Lafarge.

FIGURE 4

Announced and realized increases in price of bulk CEM I



Source: CC calculations using Tarmac's price increase announcement letters and transaction data.
 Note: Rebates submitted by Tarmac separately have been incorporated into the transaction data.

23. In order to calculate the realized average price change, we take as a base period the month just before the increase was planned to become effective (eg December in the case of January price increases) and compare the average price in that month with the one in the month in which the announced price increase became effective. Given that we expect that the price increases might not show immediately, we do the same analysis comparing the base month with each of the subsequent three months in turn (eg January, February and March in the case of January price increases). This allows us to see also how prices change over time. The results are shown in Table 3.

TABLE 3 Tarmac price increase announcements—bulk CEM I

Month of announced price increase	Month of realized price increase	Announced price increase bulk cement £/tonne	Average realized change CEM I £/tonne	Deviation from announced price £/tonne	Realized price increase %
Jan 08	Jan 08	7.45	[X]	[X]	[X]
	Feb 08		[X]	[X]	[X]
	Mar 08		[X]	[X]	[X]
Aug 08	Aug 08	3.70	[X]	[X]	[X]
	Sep 08		[X]	[X]	[X]
	Oct 08		[X]	[X]	[X]
Jan 09	Jan 09	15.75	[X]	[X]	[X]
	Feb 09		[X]	[X]	[X]
	Mar 09		[X]	[X]	[X]
Jan 10	Jan 10	5.20	[X]	[X]	[X]
	Feb 10		[X]	[X]	[X]
	Mar 10		[X]	[X]	[X]
Jan 11	Jan 11	7.00	[X]	[X]	[X]
	Feb 11		[X]	[X]	[X]
	Mar 11		[X]	[X]	[X]

Source: CC calculations using Tarmac data.

Note: These figures may need to be updated as Tarmac has not been able to verify the accuracy.

24. The data shows that Tarmac was able to increase the average price paid by customers following the 1 January 2008 and 1 August 2008 price increase announcements, passing on [X] of the price increase in both cases within three months of the date from which the price increase applied. Tarmac was also able to increase the average price following the 1 January 2009, 1 January 2010 and 1 January 2011 price increase announcements, although the price increases were less than [X] per cent of the announcement in each case.

Hanson

25. We analyse Hanson's price increase announcements over the period 2007 to 2011.⁵ Hanson's transaction data is split into broad CEM I and Other bulk cement cate-

⁵ We have treated all cement sales to Hanson's downstream operations as internal sales, even where those sales occurred before the HeidelbergCement acquisition. This affects sales to Hanson Concrete Products, Hanson UK SSC, Hanson Premis JV (Lond Con) and Hanson Redbank.

gories, but is not split into further subcategories. We therefore compare the transaction data for CEM I to the price increase announcements for product CEM I 52,5N, which was the standard product (as opposed to rapid setting) in 2010/11.⁶

26. Figure 5 shows the weighted average price for CEM I from Hanson’s transaction data alongside the implied price based on price increase letters for product 52,5N for the three months immediately following each announced price increase. The figure shows that Hanson was able to realize [redacted] proportions of the announced price increases in [redacted] but [redacted]. The pattern for Hanson is broadly similar to that for Lafarge and Tarmac up to early 2009 but [redacted].

FIGURE 5

Announced and realized increases in price of bulk CEM I

[redacted]

Source: CC calculations using Hanson’s price increase announcement letters and transaction data.

27. In order to calculate the realized average price change, we take as a base period the month just before the increase was planned to become effective (eg December in the case of January price increases) and compare the average price in that month with the one in the month in which the announced price increase became effective. Given that we expect that the price increases might not show immediately, we do the same analysis comparing the base month with each of the subsequent three months in turn (eg January, February and March in the case of January price increases). This allows us to see also how prices change over time. The results are shown in Table 4.

TABLE 4 Hanson’s price increase announcements—bulk CEM I

Month of announced price increase	Month of realized price increase	Announced price increase CEM I 52,5N £/tonne	Average realized change CEM I £/tonne	Deviation from announced price £/tonne	Realized price increase %
Jan 08	Jan 08	8.00	[redacted]	[redacted]	[redacted]
	Feb 08		[redacted]	[redacted]	
	Mar 08		[redacted]	[redacted]	
Aug 08	Aug 08	3.40	[redacted]	[redacted]	[redacted]
	Sep 08		[redacted]	[redacted]	
	Oct 08		[redacted]	[redacted]	
Jan 09	Jan 09	17.20	[redacted]	[redacted]	[redacted]
	Feb 09		[redacted]	[redacted]	
	Mar 09		[redacted]	[redacted]	
Jan 10	Jan 10	6.20	[redacted]	[redacted]	[redacted]
	Feb 10		[redacted]	[redacted]	
	Mar 10		[redacted]	[redacted]	
Jan 11	Jan 11	7.10	[redacted]	[redacted]	[redacted]
	Feb 11		[redacted]	[redacted]	
	Mar 11		[redacted]	[redacted]	

Source: CC calculations using Hanson data.

Note: Hanson was not able to replicate our results for the 2008 and 2009 price increase announcements. We believe this may be due to the treatment of sales to Hanson’s downstream operations outlined in the first footnote to paragraph 25.

28. The results show that, following all the price increase announcements, Hanson was able to increase the average price paid by customers within three months following

⁶ In 2008/09 the standard product was 42.5R. We note that the announced price increases for 42.5R were the same as those for 52.5N for all but one announcement (1 January 2008) across the period 2008/09.

an announced increase becoming effective. [REDACTED] three months after an announced increase becoming effective, [REDACTED].⁷

Cemex

29. We analyse Cemex's price increase announcements over the period 2007 to 2011. Cemex's transaction data is split into subcategories, of which we analyse Portland Bulk and Rapid Bulk, which Cemex has confirmed match the price increase announcements, which are available for CEM I and CEM I Rapid.
30. Figure 6 shows the weighted average price for Portland cement from Cemex's transaction data alongside the implied price based on price increase letters for Portland cement for the three months immediately following each announced price increase.⁸ Figure 7 shows the same data for Rapid cement. The figures show that [REDACTED].⁹

FIGURE 6

Announced and realized increases in price of bulk CEM I (Portland)

[REDACTED]

Source: [REDACTED]

FIGURE 7

Announced and realized increases in price of bulk CEM I (Rapid)

[REDACTED]

Source: [REDACTED]

31. In order to calculate the realized average price change, we take as a base period the month just before the increase was planned to become effective (eg December in the case of January price increases) and compare the average price in that month with the one in the month in which the announced price increase became effective. Given that we expect that the price increases might not show immediately, we do the same analysis comparing the base month with each of the subsequent three months in turn (eg January, February and March in the case of January price increases). This allows us to see also how prices change over time. The results are shown in Tables 5 and 6.

⁷ Hanson told us that price negotiations took place throughout the year, and that a customer who initially accepted a price increase might subsequently negotiate prices down. It said that any such price reductions happening outside the three months window used in our analysis would not be reflected in the results of the analysis, and that the figures and overall trends changed radically if the end of year average selling prices were considered Hanson noted that, for external sales, the year-on-year price had decreased between December 2008 and December 2009 and between December 2009 and December 2010. Hanson also told us that there had been a modest year-on-year increase in prices between December 2010 and December 2011. We consider year-on-year changes in average prices of cement in Appendix 7.8.

⁸ In August 2008, October 2008 and January 2009, where the announced price increases follow each other quite closely, we show the implied price based on the price increase letters for the one (in the case of August 2008) and two (in the case of October 2008) months immediately following the price increase in order for the following implied price increase to start from the prevailing price level in the month immediately preceding the month in which the announced price increase applied.

⁹ Cemex pointed out to us that Figures 6 and 7 showed that its average price for CEM I to independents [REDACTED] between March 2009 and December 2011.

TABLE 5 Cemex's price increase announcements—bulk CEM I (Portland)

Month of announced price increase	Month of realized price increase	Announced price increase Portland £/tonne	Average realized change Portland £/tonne	Deviation from announced price £/tonne	Realized price increase %
Jan 08	Jan 08	8.85	[X]	[X]	[X]
	Feb 08		[X]	[X]	
	Mar 08		[X]	[X]	
Aug 08	Aug 08	3.75	[X]	[X]	[X]
	Sep 08		[X]	[X]	
	Oct 08		[X]	[X]	
Oct 08	Oct 08	3.50	[X]	[X]	[X]
	Nov 08		[X]	[X]	
	Dec 08		[X]	[X]	
Jan 09	Jan 09	16.40	[X]	[X]	[X]
	Feb 09		[X]	[X]	
	Mar 09		[X]	[X]	
Mar 10	Mar 10	5.75	[X]	[X]	[X]
	Apr 10		[X]	[X]	
	May 10		[X]	[X]	
Jan 11	Jan 11	7.25	[X]	[X]	[X]
	Feb 11		[X]	[X]	
	Mar 11		[X]	[X]	

Source: CC calculations using Cemex data.

TABLE 6 Cemex's price increase announcements—bulk CEM I (Rapid)

Month of announced price increase	Month of realized price increase	Announced price increase Rapid £/tonne	Average realized change Rapid £/tonne	Deviation from announced price £/tonne	Realized price increase %
Jan 08	Jan 08	9.85	[X]	[X]	[X]
	Feb 08		[X]	[X]	
	Mar 08		[X]	[X]	
Aug 08	Aug 08	4.00	[X]	[X]	[X]
	Sep 08		[X]	[X]	
	Oct 08		[X]	[X]	
Oct 08	Oct 08	3.75	[X]	[X]	[X]
	Nov 08		[X]	[X]	
	Dec 08		[X]	[X]	
Jan 09	Jan 09	18.40	[X]	[X]	[X]
	Feb 09		[X]	[X]	
	Mar 09		[X]	[X]	
Mar 10	Mar 10	6.75	[X]	[X]	[X]
	Apr 10		[X]	[X]	
	May 10		[X]	[X]	
Jan 11	Jan 11	7.75	[X]	[X]	[X]
	Feb 11		[X]	[X]	
	Mar 11		[X]	[X]	

Source: CC calculations using Cemex data.

32. Tables 5 and 6 show that Cemex was able to realize a proportion of each price increase in relation to both Portland and Rapid cement. [X]

33. [X]

34. There are some limitations to this analysis:¹⁰

¹⁰ Tarmac told us that in addition to the limitations listed below, the introduction of new customers or the conclusion of an existing contract might affect the realized average price through a change in customer mix.

- (a) With the exception of [REDACTED], the transaction data submitted by all other GB cement producers is aggregated across product categories (eg CEM I, non-CEM I) and we are not able to conduct the analysis at the more disaggregated level at which some of the price increases are announced. Therefore, we had to calculate averages across gross product categories which might not reflect precisely the real price changes. This means that actual price increases may potentially be subject to volume effects. In other words, if, within a category, customers purchase more of the cheaper cement and less of the more expensive cement in proportion, this would have the effect of reducing the average price paid even if the actual price of each product did not vary.
- (b) We calculated changes with reference to delivered prices. Average delivered prices could change over time because of changes in the average distances travelled rather than because of negotiated price increases, and this could therefore affect the results in some cases.

Announced versus realized prices using all external sales

35. In this section, we present realized average prices based on all external sales rather than external sales to independents. We do this as a matter of completeness. Results are presented in Figures 8 to 12 and Tables 7 to 11. Using all external sales, rather than external sales to independents, does not alter our conclusions. Data is averaged across product and period.

Lafarge

FIGURE 8

Announced and realized increases in price of bulk CEM I—all external sales

[REDACTED]

Source: CC calculations using Lafarge's price increase announcement letters and transaction data.

TABLE 7 Lafarge price increase announcements—bulk CEM I—all external sales

Month of announced price increase	Month of realized price increase	Announced price increase CEM I 42,5N/52,5N £/tonne	Average realized change CEM I £/tonne	Deviation from announced price £/tonne	Realized price increase %
Jan 08	Jan 08	7.20	[REDACTED]	[REDACTED]	[REDACTED]
	Feb 08		[REDACTED]	[REDACTED]	[REDACTED]
	Mar 08		[REDACTED]	[REDACTED]	[REDACTED]
Aug 08	Aug 08	3.53	[REDACTED]	[REDACTED]	[REDACTED]
	Sep 08		[REDACTED]	[REDACTED]	[REDACTED]
	Oct 08		[REDACTED]	[REDACTED]	[REDACTED]
Jan 09	Jan 09	16.00	[REDACTED]	[REDACTED]	[REDACTED]
	Feb 09		[REDACTED]	[REDACTED]	[REDACTED]
	Mar 09		[REDACTED]	[REDACTED]	[REDACTED]
Mar 10	Mar 10	4.75	[REDACTED]	[REDACTED]	[REDACTED]
	Apr 10		[REDACTED]	[REDACTED]	[REDACTED]
	May 10		[REDACTED]	[REDACTED]	[REDACTED]
Jan 11	Jan 11	6.75	[REDACTED]	[REDACTED]	[REDACTED]
	Feb 11		[REDACTED]	[REDACTED]	[REDACTED]
	Mar 11		[REDACTED]	[REDACTED]	[REDACTED]

Source: CC calculations using Lafarge's data.

Tarmac

FIGURE 9

Announced and realized increases in price of bulk CEM I—all external sales



Source: CC calculations using Tarmac's price increase announcement letters and transaction data.

Note: Rebates submitted by Tarmac separately have been incorporated into the transaction data.

TABLE 8 Tarmac price increase announcements—bulk CEM I—all external sales

<i>Month of announced price increase</i>	<i>Month of realized price increase</i>	<i>Announced price increase bulk cement £/tonne</i>	<i>Average realized change CEM I £/tonne</i>	<i>Deviation from announced price £/tonne</i>	<i>Realized price increase %</i>
Jan 08	Jan 08	7.45	[X]	[X]	[X]
	Feb 08		[X]	[X]	[X]
	Mar 08		[X]	[X]	[X]
Aug 08	Aug 08	3.70	[X]	[X]	[X]
	Sep 08		[X]	[X]	[X]
	Oct 08		[X]	[X]	[X]
Jan 09	Jan 09	15.75	[X]	[X]	[X]
	Feb 09		[X]	[X]	[X]
	Mar 09		[X]	[X]	[X]
Jan 10	Jan 10	5.20	[X]	[X]	[X]
	Feb 10		[X]	[X]	[X]
	Mar 10		[X]	[X]	[X]
Jan 11	Jan 11	7.00	[X]	[X]	[X]
	Feb 11		[X]	[X]	[X]
	Mar 11		[X]	[X]	[X]

Source: CC calculations using Tarmac's data.

Note: These figures may need to be updated as Tarmac has not been able to verify the accuracy.

Hanson

FIGURE 10

Announced and realized increases in price of bulk CEM I—all external sales



Source: CC calculations using Hanson's price increase announcement letters and transaction data.

TABLE 9 Hanson's price increase announcements—bulk CEM I—all external sales

Month of announced price increase	Month of realized price increase	Announced price increase CEM I 52,5N £/tonne	Average realized change CEM I £/tonne	Deviation from announced price £/tonne	Realized price increase %
Jan 08	Jan 08	8.00	[✂]	[✂]	[✂]
	Feb 08		[✂]	[✂]	
	Mar 08		[✂]	[✂]	
Aug 08	Aug 08	3.40	[✂]	[✂]	[✂]
	Sep 08		[✂]	[✂]	
	Oct 08		[✂]	[✂]	
	Jan 09		[✂]	[✂]	
Jan 09	Jan 09	17.20	[✂]	[✂]	[✂]
	Feb 09		[✂]	[✂]	
	Mar 09		[✂]	[✂]	
Jan 10	Jan 10	6.20	[✂]	[✂]	[✂]
	Feb 10		[✂]	[✂]	
	Mar 10		[✂]	[✂]	
Jan 11	Jan 11	7.10	[✂]	[✂]	[✂]
	Feb 11		[✂]	[✂]	
	Mar 11		[✂]	[✂]	

Source: CC calculations using Hanson's data.

Note: Hanson was not able to replicate our results for the 2008 and 2009 price increase announcements. We believe this may be due to the treatment of sales to Hanson's downstream operations outlined in the first footnote to paragraph 25.

Cemex

FIGURE 11

Announced and realized increases in price of bulk CEM I (Portland)—all external sales

[✂]

Source: CC calculations using Cemex's price increase announcement letters and transaction data.

FIGURE 12

Announced and realized increases in price of bulk CEM I (Rapid)—all external sales

[✂]

Source: CC calculations using Cemex's price increase announcement letters and transaction data.

TABLE 10 **Cemex's price increase announcements—bulk CEM I (Portland)—all external sales**

<i>Month of announced price increase</i>	<i>Month of realized price increase</i>	<i>Announced price increase Portland £/tonne</i>	<i>Average realized change Portland £/tonne</i>	<i>Deviation from announced price £/tonne</i>	<i>Realized price increase %</i>
Jan 08	Jan 08	8.85	[X]	[X]	[X]
	Feb 08		[X]	[X]	[X]
	Mar 08		[X]	[X]	[X]
Aug 08	Aug 08	3.75	[X]	[X]	[X]
	Sep 08		[X]	[X]	[X]
	Oct 08		[X]	[X]	[X]
Oct 08	Oct 08	3.50	[X]	[X]	[X]
	Nov 08		[X]	[X]	[X]
	Dec 08		[X]	[X]	[X]
Jan 09	Jan 09	16.40	[X]	[X]	[X]
	Feb 09		[X]	[X]	[X]
	Mar 09		[X]	[X]	[X]
Mar 10	Mar 10	5.75	[X]	[X]	[X]
	Apr 10		[X]	[X]	[X]
	May 10		[X]	[X]	[X]
Jan 11	Jan 11	7.25	[X]	[X]	[X]
	Feb 11		[X]	[X]	[X]
	Mar 11		[X]	[X]	[X]

Source: CC calculations using Cemex's data.

TABLE 11 **Cemex's price increase announcements—bulk CEM I (Rapid)—all external sales**

<i>Month of announced price increase</i>	<i>Month of realized price increase</i>	<i>Announced price increase Rapid £/tonne</i>	<i>Average realized change Rapid £/tonne</i>	<i>Deviation from announced price £/tonne</i>	<i>Realized price increase %</i>
Jan 08	Jan 08	8.85	[X]	[X]	[X]
	Feb 08		[X]	[X]	[X]
	Mar 08		[X]	[X]	[X]
Aug 08	Aug 08	3.75	[X]	[X]	[X]
	Sep 08		[X]	[X]	[X]
	Oct 08		[X]	[X]	[X]
Oct 08	Oct 08	3.50	[X]	[X]	[X]
	Nov 08		[X]	[X]	[X]
	Dec 08		[X]	[X]	[X]
Jan 09	Jan 09	16.40	[X]	[X]	[X]
	Feb 09		[X]	[X]	[X]
	Mar 09		[X]	[X]	[X]
Mar 10	Mar 10	5.75	[X]	[X]	[X]
	Apr 10		[X]	[X]	[X]
	May 10		[X]	[X]	[X]
Jan 11	Jan 11	7.25	[X]	[X]	[X]
	Feb 11		[X]	[X]	[X]
	Mar 11		[X]	[X]	[X]

Source: CC calculations using Cemex's data.

Dispersion in price increases

36. The GB cement producers told us that, because prices were negotiated individually with customers, there was dispersion in realized price increases. As a consequence, the GB cement producers told us that an announced increase was not informative about individual customers' increases, and that dispersion would undermine any coordinating function price increase letters might otherwise have served. In this section, we analyse the extent of dispersion on realized price increases.
37. We find that the degree of dispersion varies between announcement rounds. On some occasions, most price increases are close to the announced price increase. On

other occasions, customers face a range of price increases. On other occasions yet, there is little dispersion but increases do not cluster around the announced increase. This suggests that announced price increases do not, in general, provide clear information about an individual customer's price increase. We also find that announcements made by a single GB cement producer, or a subset of GB cement producers, appear to be less successful than when all companies make announcements that become effective in the same month. This suggests that, when all GB cement producers announce price increases that become effective at the same time, this facilitates price increases.

38. We note that price changes can potentially be explained by factors other than price announcements, including changes to individual producers' customer composition and changes in customers' needs.
39. We first describe the data used in the analysis and the measures of dispersion we used. We then describe our results.

Data and prices

40. We used the same data as in our analysis of announced versus realized prices. However, for the dispersion analysis the data was aggregated in a different way. Since dispersion is a result of different customers facing different price increases, we calculated the volume weighted average delivered cement price per customer¹¹ per month.
41. We computed increases by taking first differences of each customer's monthly price. We looked at sales of bulk CEM I to independent customers. In the case of Cemex, we restricted our attention to Portland bulk cement. This is consistent with the data used in the main analysis of price announcements.
42. Finally, we dropped outliers. Some price changes represented changes by ten times announced increases, or even more. We dropped changes that occurred in months where price increases became effective and represented a change of five times the announced increase or more. As the number of discarded outliers is small, in most cases no observations are dropped.

Measures of dispersion

43. We measured dispersion by calculating the 25th and 75th percentiles¹² of the distribution of realized price increases relative to announced increases. We did this for each month and for each supplier. We also drew histograms of realized price increases relative to announced increases in the months where price increases become effective. The width of the bins in all histograms is 0.25.

Robustness checks

44. The degree of dispersion may depend on customer characteristics, such as size of purchases. If this were the case, some categories of customers would display less

¹¹ To calculate the weighted average price, we aggregated invoiced amounts and volumes of cement bought each month by customer identity, and then divided each customer's invoiced amount by volume. The average price was not calculated on a per-job-site basis.

¹² A 25th percentile is a price such that 25 per cent of observations have a price less than, or equal to, that price. A 75th percentile is a price such that 75 per cent of observations have a price less than, or equal to, that price. It follows that 25 per cent of observations have a price greater than, or equal to, a 75th percentile.

dispersion than other categories of customers. We have attempted to control for this by considering small customers and large customers separately. A majority of independent customers buy less than 1,000 tonnes of bulk cement per year from any given GB cement producers. We therefore chose this as a cut-off volume for robustness checks. For each of the GB cement producers, we calculated measures of dispersion for customers buying less than 1,000 tonnes of bulk cement per year. We also calculated measures of dispersion for customers buying more than 1,000 tonnes of bulk cement per year. Restricting attention to small customers did not alter our conclusions and therefore we do not report the results of this analysis.

Results

Cemex

45. Figure 13 shows histograms of realized price increases relative to announced increases in the months announced price increases become effective. It is apparent that the degree of dispersion varies across the different price announcement rounds. In general, only very few customers' prices increase by more than the announced increase.
46. January 2008 increases were quite concentrated slightly below the announced increase. August 2008 increases were quite concentrated around the announced increase albeit with a considerable proportion of customers facing no or small increases in price. The October 2008 increases were concentrated around zero, with very little dispersion. This increase was unique to Cemex. The March 2010 increase appears to have had mixed effects. Many customers saw no increase in March 2010. At the same time, a large fraction of customers saw increases of over 50 per cent of the announced increase. Only Cemex and Lafarge had price increases becoming effective in March 2010. The January 2009 and January 2011 increases show most customers' prices increasing by at least approximately 50 per cent of the announced increase.

FIGURE 13

Cemex's price increases relative to announced increases



Source: CC calculations using Cemex's price increase announcement letters and transaction data.

47. Table 12 shows the 25th and 75th percentiles for realized increases in delivered prices relative to announced increases in each month where a price increase becomes effective.

TABLE 12 Percentiles for relative increase in Cemex's delivered prices

Date at which announced price increase became effective	Percentiles of realized price increases relative to announced increases for the month in which the price increase became effective* (%)	
	25 th	75 th
Jan 08	[✂]	[✂]
Aug 08	[✂]	[✂]
Oct 08	[✂]	[✂]
Jan 09	[✂]	[✂]
Mar 10	[✂]	[✂]
Jan 11	[✂]	[✂]

Source: CC calculations using Cemex data.

*A 25th percentile is a price such that 25% of observations have a price less than, or equal to, that price. A 75th percentile is a price such that 75% of observations have a price less than, or equal to, that price. It follows that 25 % of observations have a price greater than, or equal to, a 75th percentile.

Hanson

48. Figure 14 shows histograms of realized increases in delivered price relative to announced increases in the months announced price increases become effective. It is apparent that the degree of dispersion varies across the different price announcement rounds. January 2008 and August 2008 increases were quite concentrated around the announced increase. In January 2009 and January 2011, most customers' prices increased by at approximately 50 per cent or more of the announced increase. January 2010 increases were concentrated around zero, meaning that most customers did not experience a price increase in January 2010, with very little dispersion. Only Hanson and Tarmac had price increases becoming effective in January 2010.

FIGURE 14

Hanson's price increases relative to announced increases



Source: CC calculations using Hanson's price increase announcement letters and transaction data.

49. Table 13 shows the 25th and 75th percentiles for realized increases in delivered prices relative to announced increases in each month where a price increase becomes effective.

TABLE 13 Percentiles for relative increase in Hanson's delivered prices

Date at which announced price increase became effective	Percentiles of realized price increases relative to announced increase for the month in which the price increase became effective* (%)	
	25 th	75 th
Jan 08	[✂]	[✂]
Aug 08	[✂]	[✂]
Jan 09	[✂]	[✂]
Jan 10	[✂]	[✂]
Jan 11	[✂]	[✂]

Source: CC calculations using Hanson data.

*A 25th percentile is a price such that 25 per cent of observations have a price less than, or equal to, that price. A 75th percentile is a price such that 75 per cent of observations have a price less than, or equal to, that price. It follows that 25 per cent of observations have a price greater than, or equal to, a 75th percentile.

Lafarge

50. Figure 15 shows histograms of realized increases in delivered price relative to announced increases in the months in which announced price increases become effective. It is apparent that the degree of dispersion varies across different price announcement rounds. January 2008 increases were quite concentrated around the announced increase, albeit with a significant proportion of customers facing no or small increases in price. August 2008 increases were quite concentrated around the announced increase. In January 2009, over half of customers experienced an increase in price amounting to more than 50 per cent of the announced increase. January 2010 increases were concentrated just below zero (indicating a small price reduction), with little dispersion.

FIGURE 15

Lafarge's price increases relative to announced increases



Source: CC calculations using Lafarge's price increase announcement letters and transaction data.

51. Table 14 shows the 25th and 75th percentiles for realized increases in delivered prices relative to announced increases in each month where a price increase becomes effective.

TABLE 14 Percentiles for relative increase in Lafarge's delivered prices

Date at which announced price increase became effective	Percentiles of realized price increases relative to announced increase for the month in which the price increase became effective* (%)	
	25 th	75 th
Jan 08	[✂]	[✂]
Aug 08	[✂]	[✂]
Jan 09	[✂]	[✂]
Mar 10	[✂]	[✂]
Jan 11	[✂]	[✂]

Source: CC calculations using Lafarge data.

*A 25th percentile is a price such that 25 per cent of observations have a price less than, or equal to, that price. A 75th percentile is a price such that 75 per cent of observations have a price less than, or equal to, that price. It follows that 25 per cent of observations have a price greater than, or equal to, a 75th percentile.

Tarmac

52. Figure 16 shows histograms of realized increases in delivered prices relative to announced increases in the months announced price increases become effective.¹³ It is apparent that the degree of dispersion varies across different price announcement rounds. January 2008 increases were concentrated around 80 per cent of the announced increase, albeit with a significant proportion of customers facing no or small increases in price. August 2008 increases were quite concentrated around the announced increase. Notably, Tarmac's 2008 increases were particularly successful in terms of increasing the average price paid by customers. In January 2009 and January 2011 most customers appear to have faced no price increase, but still a

¹³ Tarmac told us that it had been unable to replicate the figure.

significant proportion of customers faced increases or decreases. January 2010 increases were concentrated around zero, with little dispersion.

FIGURE 16

Tarmac's price increases relative to announced increases

[✂]

Source: CC calculations using Tarmac's price increase announcement letters and transaction data.

53. Table 15 shows the 25th and 75th percentiles for realized increases in delivered prices relative to announced increases in each month where a price increase becomes effective.

TABLE 15 Percentiles for relative increase in Tarmac's delivered prices

Date at which announced price increase became effective	Percentiles of realized price increases relative to announced increase for the month in which the price increase became effective* (%)	
	25 th	75 th
Jan 08	[✂]	[✂]
Aug 08	[✂]	[✂]
Jan 09	[✂]	[✂]
Jan 10	[✂]	[✂]
Jan 11	[✂]	[✂]

Source: CC calculations using Lafarge data.

*A 25th percentile is a price such that 25 per cent of observations have a price less than, or equal to, that price. A 75th percentile is a price such that 75 per cent of observations have a price less than, or equal to, that price. It follows that 25 per cent of observations have a price greater than, or equal to, a 75th percentile.

Note: Tarmac told us that it had been unable to replicate the contents of the table.

Evolution over time

54. The dispersion is not constant over time. Dispersion is usually most pronounced in the months where price increases become effective. Figures 17 to 20 illustrate how the 25th and 75th percentiles of changes to delivered price evolve over time for Cemex, Hanson, Lafarge and Tarmac, respectively.¹⁴ For reference, the 50th percentile is also included in the figures. The percentiles in these pertain to absolute price changes, *not* change relative to announced increases.
55. Periods where many customers face price changes show as spikes in the time series. It appears that the February 2010 price increases announced by Hanson and Tarmac did not translate into actual price increases until March 2010. This coincides with the month at which the price increases announced by Cemex and Lafarge became effective. Moreover, Cemex's October 2008 price announcement appears not to have translated into actual price increases.

FIGURE 17

25th and 75th percentiles of Cemex's price increases

[✂]

Source: CC calculations using Cemex's transaction data.

¹⁴ Tarmac told us that it had been unable to replicate the figure relating to its price increases.

FIGURE 18

25th and 75th percentiles of Hanson's price increases



Source: CC calculations using Hanson's transaction data.

FIGURE 19

25th and 75th percentiles of Lafarge's price increases



Source: CC calculations using Lafarge's transaction data.

FIGURE 20

25th and 75th percentiles of Tarmac's price increases



Source: CC calculations using Tarmac's transaction data.

Cement price parallelism

1. This appendix sets out the methodology for our analysis of the relationships between the GB cement producers' prices for bulk cement, and the prices of cement importers for which data was available, as well as the detailed results from this analysis.

Data and methodology

2. The prices are calculated using revenues and volumes provided by the GB cement producers and cement importers in their transactions data. The GB cement producers' transactions data is available on a monthly basis, while the cement importers' transactions data is available on a quarterly basis. Therefore, we calculate a quarterly average delivered price for each GB cement producer and cement importer, by adding up the revenues (including haulage) and volumes for each quarter, and then dividing the quarterly revenues with quarterly volumes to obtain a quarterly average delivered price.¹ However, we have also calculated the ex-shipping-point prices for those GB cement producers for which we have the relevant data, by subtracting the quarterly haulage costs from the quarterly revenues, and then dividing by quarterly volumes. All prices are calculated on a nominal basis (ie they have not been deflated).
3. We have excluded from this analysis data on bagged/packed cement and plant-to-plant transfers of bulk cement.² It is worth noting that Tarmac has provided revenues which have not netted off rebates and discounts (to the extent that they apply). However, Tarmac has provided a separate data set with the rebates and discounts, and we have netted off rebates and discounts from the revenues for Tarmac in order to obtain prices which are, as far as possible, equivalent to those of the other GB cement producers.
4. In this appendix, we focus on delivered prices of CEM I for sales to independents, in order for the prices to be directly comparable across GB cement producers and importers. As the GB cement producers' revenues comprise different proportions of CEM I sales, this is expected to be reflected in the price for all types of cement, as CEM I tends to be more expensive than CEM II/III/IV. The cement importers supply only CEM I. CEM I makes up the majority of the GB cement producers' sales, as well as being an input into non-CEM-I products, and therefore, we consider that it is relevant to look at CEM I separately.
5. In addition, we consider that it is relevant to look at sales to independents, ie excluding sales to other Majors and internal sales from the analysis. Internal sales are priced at an internal transfer price which may not reflect a transaction price, and could be used as a means of transferring profits from one part of the company into another.³ Sales to other Majors may not reflect a market price if coordination is present (for instance, prices charged for cement to other Majors could be used as a mechanism for side payments if coordination exists). Prices charged for cement by

¹ Separate haulage costs have not been provided by all companies. Also, where haulage costs have been provided separately, these have in some cases been collated specifically for the CC, and may not reflect the actual haulage costs paid by customers on each transaction. Therefore, we consider it is more appropriate to use delivered prices.

² [REDACTED]

³ Cemex told us that all transactions between Cemex's relevant GB operations were charged at the prevailing market price. If this is the case, then we note that price correlations would be unaffected by the inclusion/exclusion of internal sales as price changes will be the same regardless.

GB cement producers to other Majors are analysed in a separate appendix on cross-sales (Appendix 7.13).

6. Hanson told us that it was difficult to measure prices accurately; for example, the prices charged for bulk cement were individually negotiated, so that even if prices were unchanged, computed average prices would vary depending upon the proportion of sales to each customer. Our switching analysis (see Appendix 7.9) shows that the GB producers' customer base is relatively stable over time, while the fact that we observe strong parallelism in average prices suggests that it is unlikely that average prices are significantly affected by customer mix over time. Therefore, average prices seem to be a good proxy for the analysis.

CEM I prices faced by independent customers

Correlations between the GB cement producers', and the GB cement producers' and importers', prices

7. Figure 1 displays the quarterly average prices for CEM I for sales to independents for the four GB cement producers, across the period Q1 2007 to Q4 2011. The figure shows that there appears to be a strong relationship between the GB cement producers' prices.

FIGURE 1

GB cement producers' quarterly average prices for CEM I for sales to independents, Q1 2007 to Q4 2011

[✂]

Source: Transaction data submitted by Cemex, Hanson, Lafarge and Tarmac, and CC analysis.

8. Figure 2 shows the quarterly average prices for CEM I for sales to independents for the four GB cement producers and for four cement importers ([Importer A], [Importer B], [Importer C] and Aggregate Industries),⁴ across the period Q1 2007 to Q4 2011. As the figure shows, there seems to be a strong relationship between the GB cement producers' and [Importers A–C]'s prices. For Aggregate Industries, the relationship is [✂].

FIGURE 2

GB cement producers' and importers' quarterly average prices for CEM I for sales to independents, Q1 2007 to Q4 2011

[✂]

*[✂]

Source: Transaction data submitted by Cemex, Hanson, Lafarge, Tarmac, [Importer A], [Importer B], [Importer C] and Aggregate Industries, and CC analysis.

9. Table 1 shows the correlation coefficients between the quarterly average CEM I prices for sales to independents of the four GB cement producers as well as

⁴ These importers make up between 71 and 81 per cent (varies by year) of volumes of cement imports (excluding imports by GB producers). Aggregate Industries imports [✂] cement [✂] into GB, which is predominantly for internal use.

Aggregate Industries and [Importers A–C],⁵ across the period Q1 2007 to Q4 2011. A 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.

TABLE 1 Correlation coefficients between the quarterly average prices for CEM I for sales to independents, Q1 2007 to Q4 2011

	<i>per cent</i>						
	<i>Hanson</i>	<i>Lafarge</i>	<i>Tarmac</i>	[☒]	<i>[Importer A]</i>	<i>[Importer B]</i>	<i>[Importer C]</i>
Cemex	[☒]	[☒]	[☒]	[☒]	[☒]	[☒]	[☒]
Hanson		[☒]	[☒]	[☒]	[☒]	[☒]	[☒]
Lafarge			[☒]	[☒]	[☒]	[☒]	[☒]
Tarmac				[☒]	[☒]	[☒]	[☒]
[☒]					[☒]	[☒]	[☒]
[Importer A]						[☒]	[☒]
[Importer B]							[☒]

Source: Transaction data submitted by Cemex, Hanson, Lafarge, Tarmac, Aggregate Industries, [Importer A], [Importer B] and [Importer C], and CC analysis.

10. Lafarge, Tarmac, Cemex and Hanson have stated that the sample size used to calculate correlation coefficients between quarterly price series is too low. Table 2 shows the correlation coefficients between the monthly average CEM I prices for sales to independents of the four GB cement producers. This increases the number of observations across which correlations are calculated from 20 (in the case of quarterly prices) to 60. However, the results remain unchanged, with the correlations between the GB cement producers' CEM I monthly prices ranging from 86 to 97 per cent.

TABLE 2 Correlation coefficients between the monthly average prices for CEM I for sales to independents, January 2007 to December 2011

	<i>per cent</i>		
	<i>Hanson</i>	<i>Lafarge</i>	<i>Tarmac</i>
Cemex*	[☒]	[☒]	[☒]
Hanson		[☒]	[☒]
Lafarge			[☒]

Source: Transaction data submitted by Cemex, Hanson, Lafarge and Tarmac, and CC analysis.

*Cemex data is not available for January 2007, and therefore correlations with Cemex start in February 2007.

11. We see from Figures 1 and 2 that the average quarterly prices for all GB cement producers and importers display an upward trend over the period in question. Therefore, we also calculate correlations between detrended differences in quarterly prices, in order to remove any correlation impacts driven purely by trend. In particular, we calculate a price difference series for each company by subtracting two successive quarters (eg price in Q2 2007 minus price in Q1 2007), and we do this across the whole period (or mathematically, Δy_t). We then calculate an average difference for

⁵ These importers make up between 41 and 48 per cent (varies by year) of volumes of cement imports (excluding imports by GB producers) and represent the majority of imported cement (excluding imports by GB producers) which is sold to independents.

the period Q1 2007 to Q1 2009 ($\Delta\bar{y}_0$), and an average difference for the period Q2 2009 to Q4 2011 ($\Delta\bar{y}_1$) for each company, as we can see from Figure 1 that the series appear to have different trends in the two periods.⁶ We then subtract the average difference from the calculated difference for each quarter ($\Delta y_t - \Delta\bar{y}_0$ for the first period, and $\Delta y_t - \Delta\bar{y}_1$ for the second period) to obtain price differences controlled for trend.⁷ This approach does not exclude the possibility that the two periods have the same trend, and we are therefore not imposing an ex ante assumption that there is a break-point in trend in Q1 2009. This reduces the number of degrees of freedom for the detrended data by 2.⁸ We then calculate correlation coefficients between these detrended price difference series. The results are shown in Table 3.

TABLE 3 Correlation coefficients between the quarterly detrended prices for CEM I for sales to independents, Q1 2007 to Q4 2011

	<i>per cent</i>					
	<i>Hanson</i>	<i>Lafarge</i>	<i>Tarmac</i>	<i>[Importer A]</i>	<i>[Importer B]</i>	<i>[Importer C]</i>
Cemex	[\times]*	[\times]*	[\times]†	[\times]*	[\times]*	[\times]
Hanson		[\times]*	[\times]†	[\times]*	[\times]*	[\times]
Lafarge			[\times]†	[\times]*	[\times]*	[\times]
Tarmac				[\times]*	[\times]*	[\times]
[Importer A]					[\times]*	[\times]
[Importer B]						[\times]

Source: Transaction data submitted by Cemex, Hanson, Lafarge, Tarmac, [Importer A], [Importer B] and [Importer C], and CC analysis.

*Significant at 99 per cent level.

†Significant at 95 per cent level.

Note: n=19, d.f.=15.

12. We have also checked whether the results in Table 2 are statistically significant at the 95 and 99 per cent level, and have marked the results accordingly. We looked up the significance thresholds in a standard statistics book, which gave thresholds of 48.2 and 60.6 per cent at 95 and 99 per cent significance levels respectively where there are 15 degrees of freedom.⁹
13. Lafarge told us that our approach to detrending the price series (as outlined in paragraph 11) appeared to be unconventional and that Lafarge was not aware of its previous use. Cemex also questioned the CC's choice of detrending method. Hanson questioned the CC's method of detrending prices, stating that it was an unusual approach. As noted in the last footnote to paragraph 11 above, this approach is equivalent to a regression on a time trend allowing for a possible break in the trend in Q1 2009, and as such is not unconventional or unusual. However, we have also calculated correlation coefficients between quarterly differences in price series,¹⁰ and these also show high correlations between the GB cement producers' quarterly price differences, and between the GB cement producers' and [Importer A]'s and [Importer B]'s quarterly price differences. The results are shown in Table 4.

⁶ By calculating separate average differences for each of the periods Q1 2007–Q1 2009 and Q2 2009–Q4 2011, we are allowing for the possibility that there may be a break in the trend between the two periods, while allowing for the possibility that the trend is constant over the whole period of our sample. We are also allowing for the possibility that there is no trend in either or both periods.

⁷ This step is implicit in any time-series regression which controls for a time trend. This approach is equivalent to regression on a time trend allowing for a possible break in the trend in Q1 2009.

⁸ The degrees of freedom reduce from 19 to 17 when we detrend the data, and by a further two degrees when we calculate correlation coefficients.

⁹ G M Clarke and D Cooke, *A Basic Course in Statistics*, p359.

¹⁰ Calculated as in paragraph 11, by subtracting two successive quarters (eg price in Q2 2007 minus price in Q1 2007) across the whole period (or mathematically, Δy_t).

TABLE 4 Correlation coefficients between the quarterly price differences for CEM I for sales to independents, Q1 2007 to Q4 2011

	<i>per cent</i>					
	<i>Hanson</i>	<i>Lafarge</i>	<i>Tarmac</i>	<i>[Importer A]</i>	<i>[Importer B]</i>	<i>[Importer C]</i>
Cemex	[\times]*	[\times]*	[\times]*	[\times]*	[\times]*	[\times]†
Hanson		[\times]*	[\times]*	[\times]*	[\times]*	[\times]†
Lafarge			[\times]*	[\times]*	[\times]*	[\times]†
Tarmac				[\times]*	[\times]†	[\times]†
[Importer A]					[\times]*	[\times]†
[Importer B]						[\times]†

Source: Transaction data submitted by Cemex, Hanson, Lafarge, Tarmac, [Importer A], [Importer B] and [Importer C], and CC analysis.

*Significant at 99 per cent level.

†Significant at 95 per cent level.

Note: n=19, d.f.=15.

14. Lafarge, Tarmac, Cemex and Hanson stated that the sample size used to calculate correlation coefficients between quarterly detrended price series was too low. In Table 5 we show the correlations between detrended differences in the GB cement producers' monthly prices.¹¹ As the table shows, there is statistically significant (at 99 per cent significance level) and positive correlation between Cemex's, Hanson's and Lafarge's price difference series (ranging between [40–85] per cent), which is independent of trend in the actual price series. The correlations between Tarmac's and other GB cement producers' price difference series are also positive and statistically significant in two out of three cases, ranging between [25–65] per cent. We looked up the significance thresholds in a standard statistics book, which gave thresholds of 26.2 and 34.0 per cent at 95 and 99 per cent significance levels respectively where there are 55 degrees of freedom.¹²

TABLE 5 Correlation coefficients between the monthly detrended prices for CEM I for sales to independents, January 2007 to December 2011

	<i>per cent</i>		
	<i>Hanson</i>	<i>Lafarge</i>	<i>Tarmac</i>
Cemex*	[\times]†	[\times]†	[\times]
Hanson		[\times]†	[\times]‡
Lafarge			[\times]†

Source: Transaction data submitted by Cemex, Hanson, Lafarge and Tarmac, and CC analysis.

*Cemex data is not available for January 2007, which reduces the number of observations and degrees of freedom for any correlations with Cemex by 1.

†Significant at 99 per cent level.

‡Significant at 95 per cent level.

Note: n=59, d.f.=55.

¹¹ As with quarterly prices, we calculate a price difference series for each company by subtracting two successive months (eg price in February 2007 minus price in January 2007), and we do this across the whole period (or mathematically, Δy_t). We then calculate an average difference for the period January 2007–March 2009 ($\Delta \bar{y}_0$), and an average difference for the period April 2009–December 2011 ($\Delta \bar{y}_1$) for each company, as we can see from Figure 1 that the series appear to have different trends in the two periods. We then subtract the average difference from the calculated difference for each month ($\Delta y_t - \Delta \bar{y}_0$ for the first period, and $\Delta y_t - \Delta \bar{y}_1$ for the second period) to obtain price differences controlled for trend. This reduces the number of degrees of freedom for the detrended data by 2. We then calculate correlation coefficients between these monthly price difference series.

¹² G M Clarke and D Cooke, *A Basic Course in Statistics*, p359. We calculated the significance level for 55 degrees of freedom by linearly interpolating between the results for 50 and 60 degrees of freedom.

Cross-sales in bulk cement

Introduction

1. This appendix sets out our analysis of the Majors' sales and purchases of cement to and from each other (which we term 'cross-sales').

Cross-sales as proportion of external sales

2. The Majors have historically sold to, and/or bought from, each other significant amounts of cement (as a proportion of external sales), as shown in Figures 1 to 5.¹ However, cross-sales have fallen over time, mainly driven by the Majors' self-supply strategies.
3. Lafarge told us that the volume of cement sales between Majors had significantly reduced since 2007 in response to the downturn in economic activity/demand and as Major producers had pursued self-supply strategies and increased vertical integration.
4. Hanson told us that the majority of its sales to other Majors were made to [REDACTED], and that there was [REDACTED] over the period 2007 to 2011, as [REDACTED]. Hanson also told us that its purchases from other Majors were predominantly from [REDACTED], and that [REDACTED] in 2009 as a consequence of Heidelberg's acquisition of Hanson in 2007.
5. Cemex told us that its RMX Division has made fewer purchases from [REDACTED] in recent years, and that it had moved to taking larger internal volumes from Cemex Cement, and from [REDACTED], which has reduced logistics costs.

FIGURE 1

Cemex's revenue shares by customer for external sales of bulk cement

[REDACTED]

Source: Cemex data and CC analysis.

FIGURE 2

Hanson's revenue shares by customer for external sales of bulk cement

[REDACTED]

Source: Hanson data and CC analysis.

¹ We note that Aggregate Industries has not sold much cement to other Majors historically, but it has purchased significant amounts of cement from other Majors over the period in question.

FIGURE 3

Lafarge's revenue shares by customer for external sales of bulk cement

[✂]

Source: Lafarge data and CC analysis.

FIGURE 4

Tarmac's revenue shares by customer for external sales of bulk cement

[✂]

Source: Tarmac data and CC analysis.

Note: Revenues are net of rebates, which Tarmac provided separately.

FIGURE 5

Aggregate Industries' revenue shares by customer for external sales of bulk cement

[✂]

Source: Aggregate Industries data and CC analysis.

Note: [✂]

Value of cross-sales between the Majors

6. Figures 6 to 11 show the value of cross-sales between each pair of Majors which produce cement in the UK. From the figures we observe that [✂] is a net buyer of cement from [✂] and a net seller of cement to [✂]. [✂] is a net seller of cement to [✂] and [✂] and a net buyer of cement from [✂]. [✂] is a net seller of cement to [✂] and [✂]. [✂] is a net buyer of cement from all other Majors, and it did not sell any cement to [✂], and it sold [✂] amounts of cement to [✂] in Q4 2007 and Q4 2010.

FIGURE 6

Sales of bulk cement between Cemex and Hanson

[✂]

Source: Cemex and Hanson data and CC analysis.

FIGURE 7

Sales of bulk cement between Cemex and Lafarge

[✂]

Source: Cemex and Lafarge data and CC analysis.

FIGURE 8

Sales of bulk cement between Cemex and Tarmac



Source: Cemex and Tarmac data and CC analysis.

Note: Tarmac's revenues are net of rebates, which Tarmac provided separately.

FIGURE 9

Sales of bulk cement between Hanson and Lafarge



Source: Hanson and Lafarge data and CC analysis.

FIGURE 10

Sales of bulk cement between Hanson and Tarmac



Source: Hanson and Tarmac data and CC analysis.

Note: Tarmac's revenues are net of rebates, which Tarmac provided separately.

FIGURE 11

Sales of bulk cement between Lafarge and Tarmac



Source: Lafarge and Tarmac data and CC analysis.

7. Figures 12 to 15 show the value of cross-sales between Aggregate Industries and each other Major.

FIGURE 12

Sales of bulk cement between Aggregate Industries and Cemex



Source: Aggregate Industries and Cemex data and CC analysis.

Note:

FIGURE 13

Sales of bulk cement between Aggregate Industries and Hanson



Source: Aggregate Industries and Hanson data and CC analysis.

Note:

FIGURE 14

Sales of bulk cement between Aggregate Industries and Lafarge



Source: Aggregate Industries and Lafarge data and CC analysis.

Note: [REDACTED]

FIGURE 15

Sales of bulk cement between Aggregate Industries and Tarmac



Source: Aggregate Industries and Tarmac data and CC analysis.

Note: [REDACTED]

8. In addition to transactions data, which was used to produce the above charts, the Majors also provided us with annual summaries of their sales to and purchases from each other Major. This data is presented in Tables 1 to 5 below. This data does not always match that provided in the transactions data for bulk cement. The Majors told us that this could be due to differences in the way transactions data and purchasing data was recorded and held. In particular, Tarmac told us that data provided by other Majors could include Tarmac Building Products, which was not included in Tarmac's data. Hanson told us that discrepancies could occur as a result of different company percentage definitions or other company groupings, or different treatment of credits or other corrections, or miscoding or other data entry errors. Lafarge told us that its purchasing data was not as inherently accurate as its sales data, and to the extent that there were discrepancies between Lafarge's purchasing data and other suppliers' sales data, Lafarge suggested that sales-side data was more accurate. Cemex told us that its transactions data did not capture purchases of cement by its Cement business (only the RMX business); Castle Cement was not recognized in the data as part of Hanson, and therefore Hanson figures appeared lower than was actually the case; and some slag purchases by Cemex may have been classed as purchases of cement.
9. Table 1 shows Cemex's annual sales and purchases to other Majors. In addition, we also calculate net sales (ie sales less purchases) to each other Major. As the table shows, Cemex was a net seller of cement to Aggregate Industries and Tarmac and a net purchaser of cement from Hanson and Lafarge across most of the period 2007 to 2011.²

² Cemex told us that the [REDACTED].

TABLE 1 **Cemex's annual sales and purchases of cement from other Majors**

		Sales		Purchases		Net (sales–purchases)	
		Quantity (kt)	Value (£k)	Quantity (kt)	Value (£k)	Quantity (kt)	Value (£k)
Aggregate Industries	2007*	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	2007*	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Lafarge	2007*	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	2007*	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
All Majors	2007*	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]

Source: Cemex and CC calculations.

*2007 data starts on 1 February 2007.

10. Table 2 shows Hanson's annual sales and purchases to other Majors. In addition, we also calculate net sales (ie sales less purchases) to each other Major. As the table shows, Hanson was a net seller of cement to Aggregate Industries, Cemex and Tarmac across most of the period 2007 to 2011, and it was a net purchaser of cement from Lafarge across the same period.

TABLE 2 Hanson's annual sales and purchases of cement from other Majors

		Sales		Purchases		Net (sales–purchases)	
		Quantity (kt)	Value (£k)	Quantity (kt)	Value (£k)	Quantity (kt)	Value (£k)
Aggregate Industries	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Lafarge	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
All Majors	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]

Source: Hanson and CC calculations.

11. Table 3 shows Lafarge's annual sales and purchases to other Majors. In addition, we also calculate net sales (ie sales less purchases) to each other Major. As the table shows, Lafarge was a net seller of cement to the other Majors across the period 2007 to 2011.

TABLE 3 Lafarge's annual sales and purchases of cement from other Majors

		Sales		Purchases		Net (sales–purchases)	
		Quantity (kt)	Value (£k)	Quantity (kt)	Value (£k)	Quantity (kt)	Value (£k)
Aggregate Industries	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
All Majors	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]

Source: Lafarge and CC calculations.

12. Table 4 shows Tarmac's annual sales and purchases to other Majors. In addition, we also calculate net sales (ie sales less purchases) to each other Major. As the table shows, Tarmac was a net purchaser of cement from the other Majors across most of the period 2007 to 2011.

TABLE 4 Tarmac's annual sales and purchases of cement from other Majors

		Sales		Purchases		Net (sales–purchases)	
		Quantity (kt)	Value (£k)	Quantity (kt)	Value (£k)	Quantity (kt)	Value (£k)
Aggregate Industries	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Lafarge	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
All Majors	2007	[X]	[X]	[X]	[X]	[X]	[X]
	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]

Source: Tarmac and CC calculations.

Note: The values shown in this table are before rebates are netted off.

13. Table 5 shows Aggregate Industries' annual sales and purchases to other Majors. In addition, we also calculate net sales (ie sales less purchases) to each other Major. As the table shows, Aggregate Industries was a net purchaser of cement from the other Majors across the period 2008 to 2011.

TABLE 5 **Aggregate Industries' annual sales and purchases of cement from other Majors**

		Sales		Purchases		Net (sales–purchases)	
		Quantity (kt)	Value (£k)	Quantity (kt)	Value (£k)	Quantity (kt)	Value (£k)
Cemex	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Hanson	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Lafarge	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
Tarmac	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]
All Majors	2008	[X]	[X]	[X]	[X]	[X]	[X]
	2009	[X]	[X]	[X]	[X]	[X]	[X]
	2010	[X]	[X]	[X]	[X]	[X]	[X]
	2011	[X]	[X]	[X]	[X]	[X]	[X]
	Total	[X]	[X]	[X]	[X]	[X]	[X]

Source: Aggregate Industries and CC calculations.

Note: 2007 data is not available. The table shows sales and purchases of bulk CEM I only; data on all bulk cement was not available. Aggregate Industries told us that [X].

Average prices on cross-sales

14. Next we compare the average prices paid by the GB producers to each other, alongside the average prices paid by Aggregate Industries and independent customers to the GB producers.³ As differences in price can be driven by size of customer and the distance over which cement is delivered, we calculate prices controlling for both size of customer and delivery distance.⁴
15. The Majors tend to be very large customers for cement, and therefore there are not always many independents making similar-sized cement purchases to use as comparators. Therefore, to control for the size of customers, we compare, for each GB producer, the average prices charged to other Majors with the average prices charged to the top X independent customers of this GB producer. We allow X to differ for each GB producer, as each GB producer has a different number of customers. To illustrate this, if we held X the same across GB producers, for example the top 40 customers for each of them, this would represent 14 per cent of Lafarge's bulk cement customers (by number), as Lafarge has around [X] bulk cement customers, and [X] per cent of Tarmac's bulk cement customers, as Tarmac has around [X] bulk cement customers. Similarly, Lafarge's 40th customer (ranked in descending order by volume) purchases approximately [X] tonnes of cement a year (the precise

³ Unless otherwise stated, by prices we mean delivered prices.

⁴ For completeness, we show average prices not controlled for size of customer and delivery distance in [Annex A](#).

volume varies by year), while Tarmac's 40th customer purchases approximately [REDACTED] tonnes of cement a year.

16. We also considered whether we should set the thresholds for each GB producer using volumes purchased, ie whether we should compare the prices charged by each GB producer to other Majors with the prices charged to independent customers who purchased X tonnes or more in the year. However, the GB producers with greater external cement sales will by default sell greater volumes than the GB producers with lower external sales, so we think it is appropriate to allow the threshold to vary for each GB producer.
17. Therefore, we have analysed the transaction data to devise sensible thresholds for each GB producer given the number of customers each GB producer has and the volumes sold by each GB producer. In light of our analysis, we used the following thresholds for each GB producer:
 - (a) Lafarge—top 45 customers, which represent [REDACTED] per cent of annual volumes;
 - (b) Cemex—top 40 customers, which represent [REDACTED] per cent of annual volumes;
 - (c) Hanson—top 40 customers, which represent [REDACTED] per cent of annual volumes; and
 - (d) Tarmac—top 30 customers, which represent [REDACTED] per cent of annual volumes.⁵
18. This way, we may potentially be capturing some independents which are 'small' by some measures (eg in terms of volumes purchased). The aim of this analysis is to understand how the prices charged to other Majors compare with those charged to independents:
 - (a) If we find that prices to Majors tend to be lower than those for independents controlling for size, we should bear in mind in the interpretation of the results that some of the independents we are using as a comparator may be materially smaller (in terms of volumes purchased) than the Majors and therefore this may account for some of the difference in prices.
 - (b) If, on the other hand, we find that prices to Majors tend to be higher than those for independents controlling for size, this would be unlikely to be because independents tend to purchase more than the Majors. This would therefore make our analysis more conservative, as it means that our average price for the independents may be somewhat higher than that for the truly large independents (of which there may be too few for averaging). Therefore if we find that the Majors pay higher prices than the independents, it gives us more comfort than that this is a genuine feature of the data.
19. In terms of controlling for delivery distances, we have used two different approaches:
 - (a) The first approach uses ex-shipping-point prices, which are pre-delivery to the customer, and therefore these prices are less likely to be related to distance than

⁵ Tarmac told us that it was a net purchaser of cement and its business model was focused on self-supply, therefore meaning that it made external sales only where the margin available was high enough to compensate for having to source additional volumes externally. As a result, Tarmac told us that it had very few independent customers making similar-sized cement purchases. Tarmac also told us that a more consistent approach to control for customer size would have been to pick a sample based on absolute percentages of sales. We note that there is no one right approach, and we have chosen our approach for reasons stated in paragraphs 15–17, and we note that our approach looks at, among other factors, percentages of sales.

delivered prices. However, we cannot use this approach for Cemex, as Cemex did not provide data on haulage costs.⁶

(b) The second approach is to analyse the distance over which deliveries to larger customers⁷ are made, and derive some statistics on the distance over which cement is delivered to large customers by each Major (eg 25th percentile, median and 75th percentile). This gives a range for each Major of [redacted] miles for Lafarge⁸ and Tarmac,⁹ [redacted] miles for Cemex¹⁰ and [redacted] miles for Hanson.¹¹ Individual transactions (both by other Majors and by larger independents) which have distances outside these ranges are then dropped from the analysis.¹²

20. Figures 16 to 19 show the delivered prices charged by each GB producer to the other Majors, as well as to independents, controlled for size of customer and delivery distance (using the approach in paragraph 19(b)). The figures show that there can be significant variation in the prices paid by different customers. Annex B shows the results of our analysis using the approach in paragraph 19(a).

21. Figure 16 shows Cemex's average delivered prices to other Majors, as well as independents, controlled for size of customer and delivery distance. The chart shows several interesting facts:

(a) [redacted]; and

(b) the average delivered prices paid by [redacted] from 2009 onwards are generally significantly higher than those paid by [redacted], or the independents.¹³

FIGURE 16

Cemex's average delivered prices of cement by customer, controlling for customer size and delivery distance, £/tonne

[redacted]

Source: Cemex data and CC analysis.

22. Figure 17 shows Hanson's average delivered prices to other Majors, as well as independents, controlled for size of customer and delivery distance. The chart shows several interesting facts:

⁶ Ex-shipping-point prices are calculated by subtracting total quarterly haulage costs (for delivery from the shipping point to the customer) from total quarterly revenues, and then dividing by total quarterly volumes. Tarmac told us that the costs of rail freight from the production plant to the depots were included in the material costs, and therefore, all other things being equal, the ex-works prices from rail depots should generally be higher than from the production plant.

⁷ As defined above in paragraph 17.

⁸ [redacted]

⁹ The interquartile range is [redacted] miles on average (ie for all [redacted]), though it can be as low as [redacted] miles, and as high as [redacted] miles for the Majors. We use a range of [redacted] miles for all customers.

¹⁰ The interquartile range is [redacted] miles on average (ie for all 40 larger customers), though it can be as low as [redacted] miles, and as high as [redacted] miles for the Majors. We use a range of [redacted] miles for all customers.

¹¹ The interquartile range is [redacted] miles on average (ie for all 40 larger customers), though it can be as low as [redacted] miles, and as high as [redacted] miles for the Majors. We use a range of [redacted] for all customers.

¹² Tarmac told us that haulage costs depended systematically on whether cement was delivered from depot or directly from the cement plant, and if Majors systematically differed from independents in the degree to which they received deliveries directly from cement plants, the comparison between the groups would be distorted. Tarmac further stated that the mileage filter would disproportionately exclude direct sales from the cement plants, since these were more likely to be outside the 25–75 per cent quartiles. We believe that there is no selection problem, as we may expect distances from depots to be shorter than from cement plants, as there are more depots than plants, while also bearing in mind that cement is shipped to a depot (instead of delivered from plant) in order to avoid delivering over large distances from the plant itself. Further, Tarmac has not provided any evidence that Majors differ from independents in the degree to which they receive deliveries directly from cement plants.

¹³ Cemex told us that it was [redacted].

- (a) The average delivered price paid by Aggregate Industries was [X] paid by independents in [X], and it was [X] by independents for most of the remaining period.
- (b) The average delivered price paid by Lafarge was [X] paid by the independents in [X]. [X]
- (c) The average delivered prices paid by Cemex are generally [X] paid by the independents. We also observe a [X] paid by Cemex in [X], which is [X].
- (d) The average delivered prices paid by Tarmac are [X] paid by the independents for most of the period.

FIGURE 17

Hanson's average delivered prices of cement by customer, controlling for customer size and delivery distance, £/tonne

[X]

Source: Hanson data and CC analysis.

23. Figure 18 shows Lafarge's average delivered prices to other Majors, as well as to independents, controlled for size of customer and delivery distance. The chart shows several interesting facts:

- (a) The average delivered price paid by Aggregate Industries was [X].
- (b) The average delivered prices paid by [X].

FIGURE 18

Lafarge's average delivered prices of cement by customer, controlling for customer size and delivery distance, £/tonne

[X]

Source: Lafarge data and CC analysis.

24. Figure 19 shows Tarmac's average delivered prices to other Majors, as well as independents, controlled for size of customers and delivery distances. The chart shows that:

- (a) The average delivered price paid by [X] was [X] the average delivered price paid by independents for most of the period over which we have data.
- (b) The average delivered price paid by [X] is [X], those paid by the independents across the period over which we have data.
- (c) Tarmac did not sell any cement to [X], and it sold very little cement to [X] (though at distances falling outside of our control range) across the period in question.

FIGURE 19

Tarmac's average delivered prices of cement by customer, controlling for customer size and delivery distance, £/tonne

[✂]

Source: Tarmac data and CC analysis.

Note: Tarmac's revenues which were used to calculate prices are net of rebates, which Tarmac provided separately.

Implied revenue differentials

25. We have calculated the 'implied revenue differential' as the difference between the revenue a GB producer 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.¹⁴ We have calculated the hypothetical revenue by using the average prices charged by the GB producers to their larger independent customers controlled for delivery distance (Figures 16 to 19 above). We have assumed that the volumes remain the same in both the actual revenue and hypothetical revenue (ie we have not adjusted volumes when we have used different prices), and that these are equal to the actual volumes purchased by the Major customers controlled for delivery distance (see paragraph 19(b) above).
26. Figure 20 shows the implied revenue differentials for Cemex, split by Major customer. The figure shows that Cemex's actual revenues [✂].

FIGURE 20

Cemex's implied revenue differentials by Major customer, controlling for customer size and delivery distance

[✂]

Source: Cemex data and CC analysis.

Note: Implied revenue differential is the difference between actual revenue and hypothetical revenue, as outlined in paragraph 25.

27. Figure 21 shows the implied revenue differentials for Hanson, split by Major customer. The figure shows that Hanson's actual revenues from Aggregate Industries were typically lower than the hypothetical revenues, while the opposite is true for Cemex, Lafarge and Tarmac. Overall, Hanson earned over £2,883,000 more across the period from other Majors than it would have had it charged the same average price to other Majors as it did the independents. It is also worth noting that Hanson's implied revenue differentials seem to have decreased over the period, which may be linked with the reduction in cross-sales over the period.

¹⁴ We calculate implied revenue differentials to show the value of price differentials between independents and Majors. In particular, what appears to be a relatively small price difference (eg £1) could have a high value to the receiving party once multiplied by the volumes purchased.

FIGURE 21

Hanson's implied revenue differentials by Major customer, controlling for customer size and delivery distance

[✂]

Source: Hanson data and CC analysis.

Note: Implied revenue differential is the difference between actual revenue and hypothetical revenue, as outlined in paragraph 25.

28. Figure 22 shows the implied revenue differentials for Lafarge, split by Major customer. The figure shows that Lafarge's actual revenues [✂].

FIGURE 22

Lafarge's implied revenue differentials by Major customer, controlling for customer size and delivery distance

[✂]

Source: Lafarge data and CC analysis.

Note: Implied revenue differential is the difference between actual revenue and hypothetical revenue, as outlined in paragraph 25.

29. Figure 23 shows the implied revenue differentials for Tarmac, split by Major customer. The figure shows that Tarmac's actual revenues from [✂] were typically lower than the hypothetical revenues. Overall, Tarmac earned [✂] across the period from other Majors than it would have had it charged the same average price to other Majors as it did the independents.

FIGURE 23

Tarmac's implied revenue differentials by Major customer, controlling for customer size and delivery distance

[✂]

Source: Tarmac data and CC analysis.

Note: Implied revenue differential is the difference between actual revenue and hypothetical revenue, as outlined in paragraph 25. Tarmac's revenues which were used to calculate prices are net of rebates, which Tarmac provided separately.

RMX plant purchasing data

30. The GB producers provided us with data on purchases of cement by their RMX plants. We present this data below. Similar data for Aggregate Industries is presented in Appendix 7.5.

Lafarge

31. Lafarge has provided data on purchases of all types of cement (CEM I and non-CEM-I) by its RMX plants for the period Q1 2007 to Q4 2011 inclusive, by individual vendor (including Internal sales).
32. Figures 24 to 28 show Lafarge's purchases of cement (for downstream use in its RMX plants) for each of the years 2007 to 2011 inclusive, by vendor. Each circle

represents an RMX plant, with the sizes of the circles denoting the value of purchases by each plant. [✂]

33. The figures also suggest that, [✂].
34. Prior to 2009, there is no clear pattern, and indeed we can see from the figures that Lafarge was purchasing cement from Hanson and Cemex in 2007 and 2008 in areas very close to Lafarge's Hope and Cauldon plants. For these purchases, it is unclear whether there were logistics savings for Lafarge from purchasing cement externally. Lafarge told us that during this period there were significant shortages of cement in market conditions where demand outstripped supply, such that it was often necessary to obtain supplies from competitors in order to satisfy customer orders. Lafarge also told us that this was a consequence of a fatality at Northfleet and an explosion at Hope and at this time the focus across the network was to maintain supply to external customers. Further, Lafarge told us that although Lafarge's RMX plants supplied externally may have been closer to Hope and Cauldon, these plants would not have been significantly (if at all) further from the plants supplying them (ie Rugby, Ketton, Padeswood or South Ferriby). Lafarge also told us that RMX plants which continued to purchase cement from Cemex in 2009 were those located very close to the South Ferriby plant in Humberside where Lafarge RMX was receiving an attractive price for cement purchased from Cemex due to the competitiveness of local importers such as Dudman and Titan.
35. Further, Lafarge told us that one of the reasons why the Majors might purchase cement from each other was logistical, where there were transport cost savings (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 competitor's plant than from its own plant). Lafarge told us that comparing its lowest cost to serve model (based on plant cash costs and logistics costs) versus competitors had showed that there were a large number of other variables in play in cement supply, based on the major differences between the theoretical model output and actual supply profiles.
36. We think that supplying cement from a depot is likely to carry an additional cost penalty compared with supplying from a plant, which is why our analysis focuses on plants.

FIGURE 24

Lafarge's purchases of cement for downstream use, 2007

[✂]

Source: Lafarge data and CC analysis.

FIGURE 25

Lafarge's purchases of cement for downstream use, 2008

[✂]

Source: Lafarge data and CC analysis.

FIGURE 26

Lafarge's purchases of cement for downstream use, 2009

[✂]

Source: Lafarge data and CC analysis.

FIGURE 27

Lafarge's purchases of cement for downstream use, 2010



Source: Lafarge data and CC analysis.

FIGURE 28

Lafarge's purchases of cement for downstream use, 2011



Source: Lafarge data and CC analysis.

Cemex

37. Cemex provided data on purchases of all types of bulk cement (CEM I and non-CEM-I) by its RMX plants for the period 2007 to 2011 inclusive, by individual vendor (including Internal sales).
38. Figures 29 to 33 show Cemex's purchases of cement (for downstream use in its RMX plants) for each of the years 2007 to 2011 inclusive, by vendor. Each circle represents an RMX plant, with the sizes of the circles denoting the value of purchases by each plant.¹⁵ As the figures show, Cemex purchased significant amounts of cement externally across the period 2007 to 2011. However, the source of the external purchases has changed over time. Cemex purchased significant amounts of cement from [REDACTED] in 2007 and 2008; this was reduced significantly in 2009 to 2011. Purchases from [REDACTED] increased over time, and became more concentrated in Scotland and Wales, with internal sales in these areas reducing to almost nothing across the period. Purchases from [REDACTED] were very low in 2007 and 2008, increasing significantly in 2009. Cemex also purchased some cement from importers across the period, though these purchases were a low proportion of total purchases.
39. In particular, we can also see that:
 - (a) In 2007 and 2008, Cemex was purchasing cement from [REDACTED] and from [REDACTED]—although there was a switch to internal purchasing for South Wales in 2008. Therefore it seems likely that there is a logistics rationale for these purchases. See Section 2, Figure 2.2 for a map of the Majors' cement plants in the UK.
 - (b) In 2009, Cemex switched its purchases in [REDACTED] away from [REDACTED] to [REDACTED], despite [REDACTED] having plants which appear better located for these areas.
 - (c) In 2010 and 2011, external purchases by Cemex seem to be broadly in areas where Cemex does not have a nearby plant (in particular, Wales and Scotland). It may be somewhat surprising that Cemex purchases from [REDACTED] and [REDACTED] in North Wales and the North-West of England given that [REDACTED] which are well located to serve these areas. We think that supplying cement from a depot is likely to carry an additional cost penalty compared with supplying from a plant, which is why our analysis focuses on plants.

¹⁵ Locations are not available for every RMX plant (especially those which do not have a fixed location). These plants predominantly purchased cement internally, with some purchases from Hanson, Lafarge and Tarmac over the period 2007 to 2011.

FIGURE 29

Cemex's purchases of cement for downstream use, 2007



Source: Cemex data and CC analysis.

FIGURE 30

Cemex's purchases of cement for downstream use, 2008



Source: Cemex data and CC analysis.

FIGURE 31

Cemex's purchases of cement for downstream use, 2009



Source: Cemex data and CC analysis.

FIGURE 32

Cemex's purchases of cement for downstream use, 2010



Source: Cemex data and CC analysis.

FIGURE 33

Cemex's purchases of cement for downstream use, 2011



Source: Cemex data and CC analysis.

Hanson

40. Hanson provided data on purchases of cement (although it did not specify whether this is CEM I only, or all types of cement) by its RMX plants for the period Q1 2007 to Q4 2011 inclusive, split into internal and external purchases. Individual vendors were not provided in the data. In the data provided by Hanson, purchases from Castle Cement have been treated as internal throughout the 2007 to 2011 period.
41. Figures 34 to 38 show Hanson's purchases of cement (for downstream use in its RMX plants) for each of the years 2007 to 2011 inclusive, by internal and external purchases. Each circle represents an RMX plant, with the sizes of the circles denot-

ing the value of purchases by each plant.¹⁶ As the figures show, Hanson purchased significant amounts of cement externally across in 2007 and 2008. [✂]

42. Hanson told us that the decrease in its external purchases in 2009 was a natural result of the acquisition by Heidelberg of Hanson in 2007, the full effect of which was not felt until 2009.¹⁷ [✂]

FIGURE 34

Hanson's purchases of cement for downstream use, 2007

[✂]

Source: Hanson data and CC analysis.

FIGURE 35

Hanson's purchases of cement for downstream use, 2008

[✂]

Source: Hanson data and CC analysis.

FIGURE 36

Hanson's purchases of cement for downstream use, 2009

[✂]

Source: Hanson data and CC analysis.

FIGURE 37

Hanson's purchases of cement for downstream use, 2010

[✂]

Source: Hanson data and CC analysis.

FIGURE 38

Hanson's purchases of cement for downstream use, 2011

[✂]

Source: Hanson data and CC analysis.

Tarmac

43. Tarmac provided data on purchases of cement (though not specified whether this is CEM I only, or all types of cement) by its RMX plants for the period Q1 2007 to Q4

¹⁶ Locations are not available for every RMX plant (especially those which do not have a fixed location). These plants purchased cement both internally and externally over the period 2007 to 2011.

¹⁷ Hanson merged with Castle Cement in September 2007 as a result of the acquisition by Heidelberg. Prior to this, Hanson was not vertically integrated between cement and RMX.

2011 inclusive, split into internal and external purchases. Individual vendors were not provided in the data.

44. Figures 39 to 43 show Tarmac's purchases of cement (for downstream use in its RMX plants) for each of the years 2007 to 2011 inclusive, by internal and external purchases. Each circle represents an RMX plant, with the sizes of the circles denoting the value of purchases by each plant.¹⁸ As the figures show, Tarmac purchased the majority of its cement externally in 2007. Over the period 2007 to 2011, external purchases of cement decreased, while internal purchases increased such that in 2011, Tarmac purchased the majority of its cement internally, while external sales were concentrated in Scotland and south-eastern parts of England.

FIGURE 39

Tarmac's purchases of cement for downstream use, 2007



Source: Tarmac data and CC analysis.

FIGURE 40

Tarmac Group's purchases of cement for downstream use, 2008



Source: Tarmac data and CC analysis.

FIGURE 41

Tarmac Group's purchases of cement for downstream use, 2009



Source: Tarmac data and CC analysis.

FIGURE 42

Tarmac Group's purchases of cement for downstream use, 2010



Source: Tarmac data and CC analysis.

FIGURE 43

Tarmac Group's purchases of cement for downstream use, 2011



Source: Tarmac data and CC analysis.

¹⁸ Locations are not available for every RMX plant (especially those which do not have a fixed location). These plants purchased cement both internally and externally over the period 2007 to 2011.

Average prices on cross-sales before controlling for size of customer and delivery distance

FIGURE 1

Cemex's average delivered prices of cement by customer, £/tonne



Source: Cemex data and CC analysis.

FIGURE 2

Hanson's average delivered prices of cement by customer, £/tonne



Source: Hanson data and CC analysis.

FIGURE 3

Lafarge's average delivered prices of cement by customer, £/tonne



Source: Lafarge data and CC analysis.

FIGURE 4

Tarmac's average delivered prices of cement by customer, £/tonne



Source: Tarmac data and CC analysis.

Note: We calculated Tarmac's prices net of rebates.

Alternative method of controlling prices for customer size and delivery distance

1. This annex shows ex-shipping-point prices charged by each Major (excluding Cemex, for which we do not have ex-shipping-point prices) to the other Majors, as well as to independents, controlled for size of customer, as mentioned in paragraph 19(a) above.^{19,20}

FIGURE 1

Hanson's average ex-shipping-point prices of cement by customer, controlled for customer size, £/tonne



Source: Hanson data and CC analysis.

FIGURE 2

Lafarge's average ex-shipping-point prices of cement by customer, controlled for customer size, £/tonne



Source: Lafarge data and CC analysis.

FIGURE 3

Tarmac's average ex-shipping-point prices of cement by customer, controlled for customer size, £/tonne



Source: Tarmac data and CC analysis.

Note: We calculated Tarmac's prices net of rebates.

¹⁹ Ex-shipping-point prices are calculated by subtracting total quarterly haulage costs (for delivery from the shipping point to the customer) from total quarterly revenues, and then dividing by total quarterly volumes.

²⁰ Lafarge told us that ex-shipping point prices would not include costs Lafarge incurred in shipping product from works of manufacture to shipping point and that Lafarge incurred haulage costs both when shipping product from works of manufacture to shipping point and from shipping point to end-customer, and these costs were reflected in final delivered prices to end-customers. We consider that, while haulage costs from shipping point to customer are incurred in relation to each individual transaction, the haulage costs from works of manufacture to shipping point are incurred based on logistical considerations and not (only) in response to sales to individual customers. Also, shipping from works of manufacture to shipping point is often by rail, which is a cheaper form of transport.

Analysis of the internalization of cement purchases by Hanson in 2009

Hanson rationale for repatriation

1. Hanson told us that the rationale for the internalization of cement supplies in 2009 was linked to [REDACTED]. Hanson told us that the move towards internal supply of cement (where economically feasible) was a natural progression arising [REDACTED]. Hanson also told us that internalization was a deliberate and considered move that it expected would result in improvement in its market share. It said that the decision to internalize was taken during the second half of 2008,¹ towards the start of the economic downturn, and that the internalization of purchases was not fully implemented until 2009. As a result, there was a strong decline in Hanson's purchases from third parties, in particular Lafarge.
2. Hanson told us that Lafarge was concerned at losing such a large customer as volume leader in the market preservation of its market share was a natural priority, and as a result Lafarge did what it could to deter Hanson from taking volumes away.
3. Hanson told us that the primary factor for selecting its sites to be switched from Lafarge to Hanson cement related to the transportation costs associated with supplying grey cement from a Hanson grey cement production plant to an internal downstream site. Hanson said that initially, at the beginning of 2009, it decided to supply all of its downstream RMX and precast concrete sites internally. However, by the end of January 2009, it became apparent that the additional costs incurred in supplying its own grey cement to Hanson sites located in [REDACTED] meant that such supply was not commercially viable, involving significant transportation costs ([REDACTED]). From the end of January 2009, Hanson told us that it continued to purchase cement from Lafarge in [REDACTED].

Timeline of the internalization event and evolution of the Hanson/Lafarge relationship

4. Our review of the internal documents provided by Hanson and Lafarge, and of the correspondence between Hanson and Lafarge, suggests that there was a breakdown in the customer–supplier relationship between Hanson and Lafarge in the autumn of 2008. The failure of Hanson and Lafarge to come to an agreement on prices of supplies of cement by Lafarge to Hanson for 2009 resulted in Hanson internalizing much larger volumes of cement than it had initially intended to by January 2009.
5. Our review of the documents that [REDACTED] were provided by Hanson suggests that Hanson's assessment in the early part of 2008 was that Lafarge needed cement volume and that this could be used as a lever to extract better pricing from Lafarge. In June 2008, Lafarge notified Hanson that it intended to put prices up from 1 August. Hanson then suggested that it could internalize (Lafarge replied saying that it did not think this was a 'viable alternative') but agreement regarding the price increase was eventually reached. By no later than August 2008, Hanson had decided to internalize

¹ Hanson told us that, whilst the decision to internalize was taken during the second half of 2008, the internalization was already considered as a key strategic aim in December 2007.

[REDACTED] from Lafarge. The decision of [another Major] to repatriate from Hanson in September 2008 accelerated Hanson's plans.²

6. Around September 2008, Hanson communicated to Lafarge that it intended to stop purchasing [REDACTED] of its supplies from Lafarge in 2009 and instead self-supply these volumes ([REDACTED]). However, 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. After a series of negotiations over the prices proposed by Lafarge to Hanson for 2009, Hanson indicated to Lafarge that it was considering internalizing all purchases in 2009. [REDACTED] Lafarge did not reconsider its offerings as a consequence of Hanson threatening to internalize all its purchases from Lafarge, and in January 2009 Hanson internalized its entire demand from Lafarge—[REDACTED].
7. This is documented in internal Hanson emails from January 2009. In an email from [REDACTED]³ to [REDACTED],⁴ dated 7/1/2009, subject 're: [REDACTED]writes: '[REDACTED].'
8. On 28/1/2009, in an email from [REDACTED]⁵ to [REDACTED]⁶ on the subject of [REDACTED] writes:

[REDACTED]
9. Around February 2009, Lafarge and Hanson managed to come to an agreement on supplies and Hanson started to purchase cement from Lafarge again from then on.
10. A selection of emails and notes of meetings from the Hanson document request which retrace the negotiations with Lafarge during the period between October 2008 and April 2009 are reproduced in [Annex A](#). These are only part of the exchanges between Hanson and Lafarge and internal Hanson emails commenting on the situation. However, reading through these selected documents gives a fairly comprehensive idea of the evolution of negotiations between Hanson and Lafarge at the time.
11. [Annex B](#) sets out extracts of the documentation provided to us by Lafarge relating to the negotiations with Hanson at that time. The correspondence submitted by Lafarge shows the evolution of the negotiations between Lafarge and Hanson at the time.
12. It also appears from the internal documents provided by Hanson that Hanson had to some extent expected a reaction from Lafarge to Hanson's internalization (ie Lafarge responding by taking customers from Hanson), but that Hanson may have downplayed the threat somewhat (at least initially).
13. In an email from [REDACTED]⁷ to [REDACTED]⁸ and [REDACTED],⁹ dated 23/9/2008, Hanson does not appear to have fully anticipated the response by Lafarge to the internalization: '[REDACTED]'¹⁰ Hanson commented on this email and said that this showed that it was trying to gain 2.5 to 3 per cent share from Lafarge, and therefore clearly showed that Hanson was trying to increase its share. We note, however, that in this email, Hanson expects that Lafarge would accommodate such a market share change because it would bring Lafarge back to its production volumes.

² Supporting documents are presented in [Annex E](#).

³ [REDACTED]
⁴ [REDACTED]
⁵ [REDACTED]
⁶ [REDACTED]
⁷ [REDACTED]
⁸ [REDACTED]
⁹ [REDACTED]
¹⁰ [REDACTED]

14. An email from [REDACTED]¹¹ to [REDACTED]¹² contains as an attachment the Lafarge Cement UK price increase letter for bulk cement (dated 1 October 2008 and notifying a price increase on 1 January 2009).¹³ Price increases announced by Lafarge are the following: Portland PCRM/PCCP: £16.00; Phoenix: £11.80; PLC: £13.60; Ferrocete: £16.00; Fly Ash: £2.00; Snowcrete: £21.00. The email from [REDACTED] comments on the price increase letter from Lafarge (and in particular, the relatively low increase on Phoenix cement compared with the other cements):

[REDACTED]

15. [REDACTED]

16. In an email from [REDACTED]¹⁴ to [REDACTED],¹⁵ entitled '[REDACTED]', dated 11/10/2008:

[REDACTED]^{16,17}

17. Hanson told us that this email showed that there was no immediate or precise knowledge at the top of Hanson Cement commercial team as to which competitors had won business, and that despite some attempts to establish Hanson market share over time, the email showed that Hanson was not able to assess Hanson's share at that time, and that Hanson market share was subject to fluctuation. We note that this email shows that, when Hanson realized that it was losing market share, its management reacted by asking details on which competitors share had been lost to. The email actually shows that Hanson knows its market share (MAT¹⁸ market share and August market share), and that it is changing fast in the context of the internalization event.

18. In the documents dated December 2008, and even more so in early 2009, Hanson appears to become very aware that Lafarge is 'attacking' some of its key cement customers. The email below, from [REDACTED]¹⁹ to [REDACTED]²⁰ and [REDACTED],²¹ dated 18/12/2008 and entitled '[REDACTED]', states:

[REDACTED]

19. The following extracts from Hanson [REDACTED] dated February 2009 again mention the pressure in the cement market:

[REDACTED]

The Lafarge response to internalization

20. We first summarize Lafarge's response to our information request regarding its reaction to the Hanson internalization. We then summarize the main internal documents provided by Lafarge which relate to Lafarge's reaction following Hanson's internalization.

¹¹ [REDACTED]
¹² [REDACTED]
¹³ [REDACTED]
¹⁴ [REDACTED]
¹⁵ [REDACTED]
¹⁶ [REDACTED]
¹⁷ [REDACTED]
¹⁸ [REDACTED]
¹⁹ [REDACTED]
²⁰ [REDACTED]
²¹ [REDACTED]

Lafarge's answer to our request ²²

21. Lafarge told us that it was informed by Hanson around September 2008 that Hanson would cease to purchase a significant proportion of its existing bulk cement from Lafarge and would in the future satisfy its bulk cement requirements largely from its own production. Lafarge told us that the loss of volumes was unexpected and sudden [REDACTED]:

[REDACTED]

22. Lafarge told us that it sought to engage Hanson in discussions in an effort to minimize any reduction in Hanson's cement purchases from Lafarge, but that the negotiations stalled on the level of the proposed price for cement to be supplied by Lafarge, and on whether or not Hanson would be entitled to a volume rebate in respect of its 2008 purchases. The disagreement in relation to prices resulted from Lafarge seeking to negotiate a higher price than it would have done, in the absence of Hanson's decision to adopt a self-supply strategy (in other words, the prices that Lafarge was willing to offer for a smaller volume was higher than the price it had offered for a far larger volume). Lafarge told us that, despite intensive negotiations in the weeks leading up to Christmas, the two sides failed to reach an agreement. It was not until January 2009 that the parties were able to agree a price with effect from 1 February 2009.

23. [REDACTED]

Review of the Lafarge internal documents on Lafarge's response to the Hanson internalization

24. We have received internal documents in relation to the Lafarge strategy following Hanson's internalization. We summarize here the main documents discussing Lafarge's strategy and response to the Hanson internalization.

25. [REDACTED]

26. An email dated 26 September 2008 from [REDACTED]²³ to [REDACTED]²⁴ contains some slides discussing options following repatriation. [REDACTED]:

[REDACTED]²⁵

27. The third slide says: [REDACTED]²⁶

28. In this presentation, [REDACTED]:

[REDACTED]

29. [REDACTED]

30. The correspondence presented in [Annexes A](#) and [B](#) [REDACTED].^{27,28,29,30,31}

²² [REDACTED]
²³ [REDACTED]
²⁴ [REDACTED]
²⁵ [REDACTED]
²⁶ [REDACTED]
²⁷ [REDACTED]
²⁸ [REDACTED]

[REDACTED]^{32,33,34}

31. Subsequent internal documents provided by Lafarge [REDACTED].

32. In an internal Lafarge presentation entitled [REDACTED]:

[REDACTED]³⁵

33. Generally throughout 2009, a number of Lafarge internal documents specifically track the [REDACTED]. For instance, [REDACTED], comparing [REDACTED]. In a presentation entitled [REDACTED], a slide entitled [REDACTED].

34. In a presentation entitled [REDACTED], are summarized:

[REDACTED]³⁶

35. We also see in some internal Lafarge documents reviewed that Lafarge [REDACTED]. A presentation entitled [REDACTED], sent by [REDACTED], contains the following bullet point in a slide entitled [REDACTED].³⁷

36. Some internal Lafarge documents we received [REDACTED]. In particular, [REDACTED]^{38,39,40,41} comments:

[REDACTED]

37. In an internal Lafarge email from [REDACTED]. The idea is also developed in the presentation mentioned above in paragraph 28, in which, in a slide entitled [REDACTED], the following bullet point appears: [REDACTED].

38. However, we see no indications in subsequent internal Lafarge documents that this option was considered further, and it does not seem to have been pursued. Lafarge subsequently told us that it had long held the belief that the [REDACTED].

39. There are also a number of internal Lafarge documents in which [REDACTED]. The relevant extracts are reproduced in [Annex D](#). Of particular interest is the presentation⁴² sent [REDACTED].⁴³ In this presentation, Lafarge [REDACTED].

40. In its response to the request for information on cement switching in 2009, Lafarge told us that it [REDACTED]. Lafarge said that:

[REDACTED]

41. We note that the data submitted by Lafarge [REDACTED].

²⁹ [REDACTED]

³⁰ [REDACTED]

³¹ [REDACTED]

³² [REDACTED]

³³ [REDACTED]

³⁴ [REDACTED]

³⁵ [REDACTED]

³⁶ [REDACTED]

³⁷ Lafarge told us that, [REDACTED].

³⁸ [REDACTED]

³⁹ [REDACTED]

⁴⁰ [REDACTED]

⁴¹ [REDACTED]

⁴² [REDACTED]

⁴³ [REDACTED]

42. We also note that, subsequently, Lafarge accepted that its initial reaction to the Hanson decision to internalize had been 'emotional' and involved the specific targeting of Hanson customers, though it also noted that Hanson was Lafarge's largest customer and also had the largest and easiest customers for Lafarge to target.
43. We also note that Lafarge repatriated proportionally more of its purchases from Hanson-supplied sites than from Cemex-supplied sites. In 2008, 40 Lafarge RMX sites were purchasing cement from Hanson and all these sites had switched to internal purchasing by the second quarter of 2009. [REDACTED]
44. Lafarge told us that did not specifically target Hanson-supplied sites as opposed to Cemex-supplied Lafarge RMX plants. It said that it was not possible for Lafarge RMX to stop purchasing as much cement from Cemex as from Hanson, because the Lafarge RMX plants which continued to purchase cement from Cemex in 2009 were those located very close to the South Ferriby plant in Humberside where Lafarge RMX was receiving an attractive price for cement purchased from Cemex, due to the competitiveness of local importers such as Dudman Group and Titan supply cement. We note, however, that the some of the Lafarge RMX plants previously purchasing from Hanson were also located very close to Hanson cement plants, as can be seen in Appendix 7.13, but that Lafarge switched these purchases nonetheless (in particular many purchases near the Ketton plant).

Summary of correspondence with customers who switched

45. We have observed that a number of customers switched from Hanson to Lafarge in early 2009, so that market shares were almost rebalanced (ie the Hanson gain of cement volumes from internalization was almost compensated by an equivalent loss of cement volumes from external customers switching to Lafarge). The customers who switched were:
 - (a) Lafarge Aggregates Limited (Lafarge's UK aggregates and RMX business): in 2009, Lafarge internalized all cement purchases that it had previously sourced from Hanson;
 - (b) other Majors: [Two other Majors] both switched volumes from Hanson to Lafarge in 2009;
 - (c) a number of large packed cement customers (Travis Perkins, Jewson, etc); and
 - (d) a number of independent RMX and concrete customers.
46. In the context of the internalization and the rebalancing of shares between Lafarge and Hanson, it is particularly interesting to understand the rationale for two of the other majors ([REDACTED] and [REDACTED]) for switching from Hanson to Lafarge at the time (which greatly contributed to rebalancing the shares). The locations of [other Majors'] cement-consuming sites (largely RMX plants) and the locations of Hanson and Lafarge's cement production sites did not change during this time period, therefore the costs to Hanson and Lafarge to serve the [other Majors] sites that were switched from Hanson-supplied cement to Lafarge-supplied cement are unlikely to have changed. If Lafarge offered a lower price to [other Majors] for cement supplies to these sites than it had previously, it can only have been because Lafarge was prepared to accept a lower margin for these sales than it had been prior to 2009.

[Other Major 1] switch

- 47. [Other Major 1] told us that the switch from Hanson to Lafarge in 2009 was just one consequence of an initiative designed to reduce costs. It told us that the initiative included a review of [other Major 1] RMX's cementitious supplies including the renegotiation of supply prices. [REDACTED]
- 48. [REDACTED]⁴⁴ [REDACTED] but Lafarge [REDACTED].⁴⁵
- 49. [REDACTED]
- 50. [REDACTED]
- 51. [REDACTED]
- 52. [REDACTED]
- 53. Our review of the documents that were [REDACTED] also revealed [REDACTED].^{46,47,48,49}
[REDACTED]
- 54. [REDACTED]

[Other Major 2] switch

- 55. We received many more documents on the switch by [other Major 2].
- 56. [REDACTED]
- 57. [REDACTED]^{50,51,52}
- 58. [REDACTED]^{53,54,55}
- 59. [REDACTED]^{56,57}
- 60. [REDACTED]^{58,59}
- 61. [REDACTED]
- 62. [REDACTED]⁶⁰
- 63. [REDACTED]^{61,62}

⁴⁴ [REDACTED]
⁴⁵ Lafarge told us that [REDACTED].
⁴⁶ [REDACTED]
⁴⁷ [REDACTED]
⁴⁸ [REDACTED]
⁴⁹ [REDACTED]
⁵⁰ [REDACTED]
⁵¹ [REDACTED]
⁵² [REDACTED]
⁵³ [REDACTED]
⁵⁴ [REDACTED]
⁵⁵ [REDACTED]
⁵⁶ [REDACTED]
⁵⁷ [REDACTED]
⁵⁸ [REDACTED]
⁵⁹ [REDACTED]
⁶⁰ [REDACTED]

- 64. [REDACTED]^{63,64}
- 65. [REDACTED]⁶⁵
- 66. [REDACTED]
- 67. [REDACTED]
- 68. [REDACTED]⁶⁶
- 69. [REDACTED]^{67,68}
- 70. [REDACTED]⁶⁹
- 71. [REDACTED]^{70,71,72,73}

Independent customers who switched (packed cement and RMX customers)

- 72. We have reviewed the internal documents and correspondence with cement customers who switched between Hanson and Lafarge. Our review suggests that Hanson’s perception was that Lafarge was ‘attacking’ some key customers. Extracts from our review of the correspondence and documents on customers who switched is reproduced in [Annex C](#).
- 73. We also conducted interviews with four of the independent bulk customers who switched at the time. One RMX customer (Geddes) told us that it was only able to get a good price for its cement when there was a dispute between the majors: Geddes told us that the periods where a competitor would undercut an incumbent supplier coincided with disputes between the vertically-integrated cement manufacturers arising from their practice of supplying each other with significant quantities of cement. Geddes considered that competing suppliers were usually reluctant to give quotes to Geddes, and that options for switching to another Major producers only arose during disputes between the Majors. Another recent dispute between the Major producers had led to [REDACTED].

61 [REDACTED]
62 [REDACTED]
63 [REDACTED]
64 [REDACTED]
65 [REDACTED]
66 [REDACTED]
67 [REDACTED]
68 [REDACTED]
69 [REDACTED]
70 [REDACTED]
71 [REDACTED]
72 [REDACTED]
73 [REDACTED]

**Selected correspondence and notes of meetings between Lafarge
and Hanson in the period of September 2008 to March 2009**



**Selected correspondence between Lafarge and Hanson in the period of
December 2008 to February 2009**



Extracts of documents and correspondence with customers who switched



Further extracts of Lafarge internal documents relating to the Hanson repatriation



Documents obtained from Hanson [✂]

[✂]

The impact of the JV and entry of Mittal

The CC's investigation of the proposed Anglo–Lafarge JV and the CC's decisions on remedies

1. On 2 September 2011, the OFT referred to the CC for investigation and report under the Act the anticipated construction materials JV between Anglo American and Lafarge Group. The CC published its final report of its investigation (the Anglo/Lafarge final report) on 1 May 2012.
2. As set out in Section 2 of the Anglo/Lafarge final report, Anglo American's and Lafarge Group's UK activities in aggregates, asphalt, RMX, cement, waste management and asphalt surfacing would be contributed to the proposed JV. Excluded from the proposed JV were Anglo American's UK activities in building products (ie its Tarmac Building Products subsidiary), and Lafarge Group's UK activities in gypsum (ie plaster, plasterboard, plaster blocks and joint compounds). The pro forma FY10 revenues for the proposed JV were estimated to be around £2 billion with EBITDA of around £210 million. Anglo American and Lafarge Group would each hold a 50 per cent stake in the proposed JV's share capital with equal representation on the board.
3. Further details of the structure of the JV are set out in Appendix E of the Anglo/Lafarge report, along with an outline of its rationale and the events leading up to the proposal to create the JV.
4. In the Anglo/Lafarge final report, the CC concluded that the proposed JV may be expected to result in an SLC leading to prices that would be higher than might otherwise be the case in the following markets:
 - (a) the market for the supply of bulk cement in the UK, as a result of coordinated effects that were expected to arise from the proposed JV;
 - (b) 19 local markets for the supply of primary aggregates for construction applications, as a result of unilateral effects;
 - (c) the market for the supply of rail ballast in the UK, as a result of unilateral effects;
 - (d) the market for the supply of high-purity limestone in the UK, in relation to high-purity limestone supplied for FGD applications, as a result of unilateral effects;
 - (e) two local markets for the supply of asphalt, as a result of unilateral effects; and
 - (f) seven local markets for the supply of RMX as a result of unilateral effects.
5. Anglo American and Lafarge (collectively the JV parties) proposed a series of divestitures to address these SLC findings.
6. Following discussions with the CC about a range of possible divestitures, the final divestiture proposal put forward by the JV parties to remedy the SLC finding of coordinated effects in cement comprised:
 - Lafarge's Hope cement plant (with a cement capacity of around [X] Mt a year);

- Lafarge’s Dowlow quarry, which would provide the acquirer of Hope with a potential alternative source of limestone;¹
 - associated rail-linked depots at Theale in west Berkshire, Walsall in the West Midlands and Dewsbury in West Yorkshire (Hope also has permission to deliver up to [REDACTED] kt per year of cement by road);² and
 - a portfolio of [REDACTED] RMX plants with approximately [REDACTED] of sales volume (equivalent of around [REDACTED] of blended cement³). This would enable the purchaser to meet around [REDACTED] of Hope’s cement capacity through internal sales.⁴
7. The CC’s assessment of the effectiveness of this divestiture in remedying the SLC it had identified in cement is set out in paragraphs 8.102 to 8.145 of the Anglo/Lafarge final report. It is important to note that this assessment was focused on the specific and narrow question of the effectiveness of this remedy, rather than of the overall effect of such a divestiture on all aspects of competition.
 8. To address the SLC findings of unilateral effects in markets for aggregates, asphalt and RMX, the JV parties proposed to divest one or more sites in each problematic overlap area in order to remove any potential source of the SLC. This divestiture package comprised:
 - (a) Tarmac’s 50 per cent interest in MQP;⁵
 - (b) six other primary aggregates sites (three from Lafarge,⁶ three from Tarmac⁷) and one aggregates depot (Lafarge’s Ashbury depot);
 - (c) two other asphalt plants;⁸ and
 - (d) six RMX plants.⁹
 9. The CC concluded that the above combination of divestitures would be an effective remedy to address the SLCs that had been found and represented a less onerous solution than full prohibition (the only other effective remedy identified). As this combination of divestitures was more proportionate than prohibition, it was therefore the CC’s preferred solution.
 10. The CC decided to require Anglo American and Lafarge to implement these divestitures as a condition for allowing the proposed JV to proceed. The implementation of these divestitures was made subject to various safeguards including CC scrutiny of

¹ Lafarge told us that the Dowlow site contained over [REDACTED] Mt of consented limestone reserves and was rail-linked and 10 miles away from Hope. [REDACTED]

² The JV parties told us that Theale would provide the buyer of Hope with capacity of [REDACTED] and access to demand in the South of England, while Dewsbury with capacity of [REDACTED] was well located to serve the major conurbations in the North of England. Each of these depots has blending facilities on site which could be utilized by the purchaser to produce CEM II or CEM III, effectively expanding the cement production capacity of the cement plant. The Walsall depot has further capacity of [REDACTED].

³ Based on a conversion rate of [REDACTED].

⁴ Paragraph 8.75 of the Anglo/Lafarge final report indicated that, in the remedies implementation phase, the CC would be prepared to allow some flexibility about the specific RMX sites to be divested—for example, if potential purchasers did not wish to acquire specific RMX sites, or if local unilateral effects concerns might be raised in respect of a purchaser’s existing RMX operations. However, the CC would need to be satisfied that this was necessary to achieve an effective disposal, did not compromise the remedy’s effectiveness and did not reduce the overall volumes of RMX to be divested from the JV entity.

⁵ MQP includes aggregates quarries at Cliffe Hall and Griff, divestiture of which addressed specific problematic overlaps.

⁶ Dowlow, Britton Ferry and Willington. A collocated RMX plant at Briton Ferry was also included in the divestiture package.

⁷ Coxhoe, Holme Hall and Potton.

⁸ Tarmac’s asphalt plant at Cavenham and Lafarge’s Wivenhoe plant.

⁹ We found seven problem areas in relation to RMX for which the main parties proposed six divestitures. This reflects the position that the seven problem areas included both the Lafarge Greenock and Tarmac Greenock areas. The proposed divestiture for both the Lafarge Greenock and Tarmac Greenock areas is the same RMX site (Tarmac Greenock).

potential purchasers, the ability for the CC to appoint a divestiture trustee and a requirement on the JV parties to complete the divestiture of cement, RMX and associated operations before the CC would give its final approval to the proposed JV.

Implementation of remedies following the Anglo/Lafarge final report

11. Following the publication of the Anglo/Lafarge final report, the CC negotiated undertakings with the JV parties to implement the divestiture remedies as set out in that report. Final undertakings were accepted by the CC on 27 July 2012.¹⁰
12. At around the same time, the JV parties started the process of marketing the operations to be divested to interested bidders. The JV parties had a preference for marketing the majority of these operations together as a single package. There were two main constraints on their ability to sell all the operations to be divested to a single purchaser:
 - Any sale of Tarmac's 50 per cent ownership interest in MQP is subject to a right of pre-emption in favour of Hanson Quarry Products Europe. Tarmac was therefore not in a position to conclude a sale of MQP to any other party unless and until Hanson had considered whether or not to exercise this right.
 - It would not be possible to sell all the RMX sites to be divested to a single bidder. This was because both the Tarmac and Lafarge RMX sites involved in four of the six problematic overlaps had been included in the list of RMX sites which the JV parties had undertaken to divest. As such, had both Tarmac and Lafarge sites in a particular area been sold to the same bidder, this would not have resulted in an effective remedy to the specific SLC resulting from the problematic RMX overlap. In addition, when the undertakings were agreed, it was conceivable that problems might arise in relation to other specific RMX sites (eg as a result of competition conflicts with a specific purchaser, or in relation to consents required from third parties).
13. Given these preferences and constraints, the JV parties marketed the following two packages to potential bidders:
 - The 'Hope package'—comprising the Hope cement plant, all the aggregates and asphalt operations to be divested (other than those that formed part of MQP) and all the RMX operations to be divested (with the exception of the five RMX sites which needed to be sold separately); and
 - Tarmac's 50 per cent share in MQP.
14. On 16 November 2012, after considering offers from a number of bidders, the JV parties exchanged contracts in relation to both the Hope package and (subject to Hanson's consideration of its pre-emption rights) Tarmac's 50 per cent share in MQP with MI.
15. Following clearance under the EU Merger Regulations¹¹ on 14 December 2012 and final purchaser approval from the CC, the sale of the Hope package to MI was concluded on 7 January 2013. MI named the acquired business Hope Construction

¹⁰ These are available at www.competition-commission.org.uk/our-work/anglo-american-lafarge/undertakings-and-order.

¹¹ Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings, and Commission Regulation (EC) No 802/2004 of 21 April 2004 implementing Council Regulation (EC) No 139/2004.

Materials. On the same day, all regulatory conditions having been met, Anglo and Lafarge concluded the JV which was named Lafarge Tarmac.

16. The total consideration agreed for the purchase of the Hope package and of Tarmac's stake in MQP was £272 million. [✂]
17. Three further aspects of the Sale and Purchase Agreement are likely to affect commercial relationships between HCM and Lafarge Tarmac for a period following the transaction:
 - [✂]
 - As anticipated in paragraph 8.37 of the Anglo/Lafarge final report, [✂].
 - [✂]
18. Following the completion of the divestiture of the Hope package, the formation of Lafarge Tarmac and the completion of the divestiture of Tarmac's 50 per cent stake in MQP to Hanson, the remaining divestitures to be completed were of five RMX sites, namely the Lafarge sites at Whisby, Greenock and Newport and the Tarmac sites at Thirsk and Selby which for various reasons, it had not been possible to include within the scope of the Hope package.¹²

CC assessment of the impact of divestiture in Anglo/Lafarge investigation

19. In the Anglo/Lafarge investigation, the CC considered whether the divestitures put forward by the JV partners would be effective in remedying the loss of competition arising from the proposed JV. In that investigation, while the CC compared the situation with remedies against the counterfactual (ie the pre-merger situation), the focus on the CC's assessment was on the effectiveness of the divestitures in addressing the SLC that it had found. As such, the CC did not conclude as to whether the new market structure following the formation of the proposed JV and implementation of the required divestitures might actually increase competition.

Remedies to address unilateral effects in aggregates, asphalt and RMX markets

20. The assessment of the various divestitures to address unilateral effects in aggregates, asphalt and RMX markets is in paragraphs 8.13 to 8.30 and 8.101 of the Anglo/Lafarge final report, which concluded that they would be effective in remedying all the CC's SLC findings of unilateral effects in markets for aggregates, asphalt and RMX.

Remedies to address coordinated effects in cement

21. The consideration of the effectiveness of the divestiture of the Hope package (and specifically of the operations set out in paragraph 6 above) on the SLC finding of coordinated effects in cement is set out in paragraphs 8.102 to 8.145 of the Anglo/Lafarge final report and is summarized in paragraphs 4 to 10 above.

¹² The first four of these sites had needed to be divested separately because Anglo and Lafarge decided to divest both Anglo and Lafarge's RMX sites in a number of the problematic RMX overlaps (see paragraph 8(d)). [✂]

22. This CC's assessment in the Anglo/Lafarge final report considered whether the combined effect of the JV and the divestiture on the structure of cement and RMX markets would increase the susceptibility of the GB cement market to coordination. In so doing, the Anglo/Lafarge final report considered the potential impact of these structural changes on the three conditions for coordination:
23. Looking first at the ability to reach and monitor coordination, the CC concluded that the divestiture would maintain the situation before the proposed JV in terms of the number of major UK cement producers. Similarly, as a result of the scale and geographic scope of the RMX operations to be divested, Lafarge Tarmac post-divestiture was unlikely to have materially different information from its RMX operations than Lafarge does today about the actions of other UK cement producers. The CC therefore concluded that allowing the JV to proceed subject to the divestiture was unlikely to make it materially easier to reach and/or monitor the terms of coordination in cement, whether such coordination was new or pre-existing.
24. Second, having reviewed various potential effects on the incentives of individual cement producers to deviate from coordination and/or to punish any deviation from coordination by others, the CC concluded that allowing the JV to proceed subject to the divestiture was unlikely to result in a material increase in the internal sustainability of coordination, whether such coordination was new or pre-existing.
25. Third, in relation to external sustainability, the CC noted that the divestiture would replace Tarmac with a competitor with different characteristics from Tarmac in terms of key competitive variables such as size of plant, prospects for future expansion and, to some degree, the extent of its vertical integration. Some of these factors—in particular the size of the cement plant—might increase, relative to Tarmac, the external constraint posed by the new competitor on any coordinating group. Other factors—including the absence of scope for plant expansion in the medium to long term—might reduce the strength of any such constraint.
26. The CC also noted a risk that the acquirer of the divested business might, at some stage, participate in a current or future coordinating group. The CC took the view that this risk had been substantially reduced by the design of the divestiture package, in particular, because the divestiture of a large volume of RMX capacity would ensure that a large proportion of the new company's cement output will be absorbed by its downstream RMX business. The CC took the view that, as with Tarmac prior to the JV, this should encourage the new company to operate its cement plant at a high level of capacity. The CC's oversight of the divestiture process, including scrutiny of potential purchasers, was also expected to reduce this risk.
27. In conclusion, based on its assessment of the impact of the divestiture on market structure and on the conditions for coordination, the CC took the view that the divestiture would address its key concerns about the impact of the JV (as originally proposed) on coordination in the UK bulk cement market. In particular, the divestiture would remove concerns that resulted from the reduction in the number of UK cement producers from four to three and from the increased similarity, in terms of vertical integration, between Lafarge Tarmac, Cemex and Hanson.
28. However, the CC acknowledged that the divestiture did involve some risks. Many of these would have arisen to some degree in any divestiture and the CC took the view that these were generally capable of being effectively managed through careful design and implementation. Against these risks was the fact that the divestiture package included a larger cement plant than the Tarmac plant that was being contributed to the JV. The CC concluded that this, combined with the strategic un-

certainty associated with the entry of a new player into the UK cement market, had some potential to undermine coordinated behaviour.

29. The CC concluded that the divestiture was of sufficient scale and scope effectively to restore the essential characteristics of the market structure in cement and RMX before the proposed JV. The competitive conditions that would result from allowing the proposed JV to proceed subject to the divestiture would depend on a variety of factors that were difficult to predict with certainty. There are possible scenarios in which the divestiture might result in a more competitive situation than the counterfactual, and other possible scenarios in which it might result in a less competitive situation. On balance, the CC concluded that allowing the proposed JV to proceed subject to the divestiture was unlikely to result in a material change in the susceptibility of the UK bulk cement market to coordination relative to the counterfactual. Consequently, the CC concluded that the divestiture would be an effective remedy.

Mittal Investments' plans for Hope Construction Materials

30. MI shared its initial thinking about its plans for HCM with the CC during the purchaser suitability process. We would expect these plans to evolve during the first year of operation of the new business. We set out below our current understanding of these plans as they relate to:
- (a) management (paragraphs 31 and 32);
 - (b) projected financial performance (paragraphs 33 and 34);
 - (c) cement (paragraphs 35 to 40);
 - (d) RMX (paragraphs 41 and 42); and
 - (e) aggregates (paragraph 43).

Management

31. HCM was divested with a senior management team comprising former employees of Tarmac/Anglo American and Lafarge.¹³ On completion of the acquisition, Amit Bhatia (a member of the Mittal family) was appointed as Chairman.
32. [REDACTED]

Projected financial performance

33. Table 1 shows MI's projections of the overall financial performance of HCM.

¹³ [REDACTED] (CEO [REDACTED]), [REDACTED] (Finance Director [REDACTED]), [REDACTED] (Managing Director, Cement [REDACTED]), [REDACTED] (Managing Director, Concrete, Aggregates & Asphalt [REDACTED]), [REDACTED] (HR [REDACTED]), [REDACTED] (Legal Director [REDACTED]).

TABLE 1 Projected financial performance of HCM as at December 2012

	Estimated pro-forma outcome	Business plan, financial year ending 31 December				
	2011	2013e	2014e	2015e	2016e	2017e
Consolidated revenue (ex works) (£m)	[X]	[X]	[X]	[X]	[X]	[X]
Consolidated EBITDA (£m)	[X]	[X]	[X]	[X]	[X]	[X]
Consolidated margin over revenue (%)	[X]	[X]	[X]	[X]	[X]	[X]

Source: MI.

34. MI expects [X].

Cement

35. MI intends [X]. Table 2 shows [X].

TABLE 2 Expected annual cement output of HCM as at December 2012

	Actual output	kt a year			
		Projections, financial year ending 31 December			
		2011	2013e	2014e	2015e
Total cement volume [X]	[X]	[X]	[X]	[X]	[X]
Of which:					
CEM I	[X]	[X]	[X]	[X]	[X]
% of total volume	[X]	[X]	[X]	[X]	[X]
CEM II	[X]	[X]	[X]	[X]	[X]
% of total volume	[X]	[X]	[X]	[X]	[X]
CEM III	[X]	[X]	[X]	[X]	[X]
% of total volume	[X]	[X]	[X]	[X]	[X]
CEM IV	[X]	[X]	[X]	[X]	[X]
% of total volume	[X]	[X]	[X]	[X]	[X]

Source: MI.

36. [X]

37. As shown in Table 2, [X].

38. [X]

39. Given its expectations regarding the output of the Hope plant, MI's GB cement market share will depend on a range of factors, including the extent to which the GB cement market expands during the next few years. [X]

40. MI's longer-term plans for its cement business [X].

RMX

41. MI told us that [X].

42. MI estimated that [X].

Aggregates

43. MI expects [✂].

Views of the Majors

44. At their hearings and in their responses to our provisional findings, the Majors commented on the likely impact of the formation of Lafarge Tarmac and of HCM. We set these out below, addressing first the comments made in relation to the impact of the formation of Lafarge Tarmac, and then those made in relation to the impact of HCM.

On the impact of the formation of Lafarge Tarmac

45. In our provisional findings, we expressed the view 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 key factors that contribute to the mechanism of coordination we described.
46. In its response to our provisional findings, Lafarge Tarmac submitted that we had provided no analysis for this conclusion, except for noting that Lafarge Tarmac's employees would be drawn from the two businesses.¹⁴ Lafarge Tarmac disagreed with our view in the provisional findings. It told us that Lafarge Tarmac was a new competitive force, managed independently from either Lafarge SA or Anglo American Plc, with a changed management structure that was incentivized by reference to Lafarge Tarmac's performance and not to the performance of its shareholders, Lafarge and Anglo American.¹⁵ It also told us that through its increased focus on VAPs, it had different incentives to other cement and independent RMX producers. It put to us that Lafarge Tarmac 'will target customers with a "value in use" proposition which will differentiate it from other competitive offers. The investment in this differentiation is an important part of LT's marketing promotion.'¹⁶
47. Earlier, at its hearing, Lafarge had told us that Tarmac's cement operations ceasing to be independent would not materially facilitate transparency, since Tarmac was not a disruptive force that caused variability regarding cement supplies to non-Major customers. The formation of Lafarge Tarmac would also result in substantial reductions in variable cost of production. The competitive benefits flowing from the formation of Lafarge Tarmac were unlikely to fully materialize within the period of the market investigation. Any conclusions that the CC reached on the likelihood of coordination between GB cement producers and any possible remedies must be cast in light of the impact of the divestments required as a result of the Anglo/Lafarge final report.
48. Both Hanson and Cemex also commented on the conclusion in our provisional findings that we expected Lafarge Tarmac to follow broadly similar competitive strategies in cement to those pursued by Lafarge prior to 2013.
49. Hanson considered that our conclusion was based on a superficial look at the evidence.¹⁷ It submitted that:¹⁸

¹⁴ [Lafarge Tarmac response to provisional findings and Remedies Notice](#), paragraph 146.

¹⁵ *ibid*, paragraphs 146–150.

¹⁶ *ibid*, paragraph 149.

¹⁷ [Hanson response to provisional findings](#), paragraphs 20.1 & 20.2.

- From a structural point of view, Lafarge Tarmac had significantly more aggregates business and less (less than 6 per cent of the overall cement market) cement capacity compared with Lafarge and Tarmac pre-JV. Hanson stated that Lafarge Tarmac had 16 per cent fewer fixed RMX plants and 75 per cent more on site plants.
 - We had not considered the structural implications and changed incentives due to the synergies that the JV was likely to exploit.
 - We had not considered the impact of the JV on the behaviour of the new entity. Hanson noted that the 4,500 staff that had been with Tarmac would not have had experience of coordinating behaviour, and that their inclusion within the larger group would alter mentality and operations of what was once Lafarge UK in this respect.
 - Lafarge Tarmac operated as an independent JV, and was operated as a stand-alone business.
 - The 50/50 structure of the JV suggested that both firms had an equal vote in the operation of the company, and we should not assume that the JV would simply function as a continuance of the Lafarge business.
50. Cemex, in turn, told us that it appeared we had not taken regard to Lafarge's submission that the JV would result in a substantial reduction in its variable costs, thereby altering its position and incentives in the market.¹⁹ Cemex considered that this reduction provided the JV to compete more vigorously on price and reduced any incentive we might have previously identified for Lafarge to act as a leader within a coordinating group in relation to price increases.²⁰

On the impact of the formation of HCM

51. At its hearing, Lafarge told us that the creation of Lafarge Tarmac and the divestments resulting from the remedies package would have a substantial impact on the relevant markets, as well as on the structure of Lafarge's existing business.
52. The divested assets allowed for the creation of a new, national player with significantly greater cement capacity and external cement sales than those of Tarmac prior to the JV. The new player, HCM, would be a more competitive player than Tarmac in cement. Tarmac operated at full capacity and was a net purchaser of cement. HCM would have greater scope to compete externally than Tarmac. It would thus represent a more effective competitor in cement than Tarmac.
53. Tarmac told us that given the number of divestments required before the JV could be established, the market structure in each of the reference markets was likely to change, paving the way for new entrants and additional competition. The divestments would result in more choice for customers. The shape of the cement market would change considerably and significantly due to the JV as well as HCM being net suppliers of cement.
54. Hanson told us that it would be very important for the CC's analysis to take into account the changing market dynamics resulting from the completion of the Lafarge

¹⁸ *ibid*, paragraphs 20.3–20.7.

¹⁹ [Cemex response to provisional findings](#), paragraph 18.6.

²⁰ *ibid*, paragraph 18.6.

Tarmac JV and the entry of Lakshmi Mittal and HCM into the cement, RMX and aggregates markets. It noted, for example, that Lafarge Tarmac had a different cement and RMX profile from that of either of the legacy companies. HCM was a new entrant into the GB cement and RMX markets with material positions in both markets, but a different profile and potentially different incentives to either of the legacy operators.

55. Hanson considered that these developments introduced great uncertainty into the markets and would most likely lead to a fundamental shift in market dynamics (in particular, as regards cement and RMX) and on a very significant scale, signs of which were already clearly visible (according to what Hanson said was its recent and current experience) in the market at present. Hanson said that, [REDACTED].²¹ [REDACTED] It could not know what strategy HCM and Lakshmi Mittal may bring to the UK cement market, other than to note that HCM would in all likelihood work to establish a very significant market share to match their capacity. According to Hanson, both theoretically and in actuality, HCM was likely to seek growth within the market commensurate with what Hanson considered to be HCM's very significant capacity in cement. Hanson told us that this was further facilitated by HCM's ownership of a similar number of RMX sites to each of Hanson and Cemex, which Hanson said provided the principal route to market for GB-produced cement and so would allow HCM to take a very significant UK cement share.
56. Hanson commented that the extent of change and instability likely to be introduced by HCM meant that it should be considered a new entrant. For example, according to Hanson:
- (a) Unlike Tarmac, HCM was expected to be 'long' in cement with a significant surplus to carry out external sales. Hanson said that Tarmac's cement plant was largely concentrated on internal supply, whereas HCM would have excess capacity to supply independent customers. Hanson told us that the net effect would be to introduce a new major player into the supply of cement to the independent RMX sector.
 - (b) Hanson noted that HCM was ultimately owned by an investor (Lakshmi Mittal and MI) who had world-leading experience in steel manufacture. Hanson argued that this brought inherent scope for change and instability. According to Hanson, MI had a reputation for bringing in world-leading process improvements and efficiency investments in logistics. Hanson expected this to generate a differentiated approach to GB cement production and supply.
57. Hanson said that MI's investment represented a clear opportunity for HCM to leverage the international spread and financial resources of its group to produce clinker overseas and grind it in GB. According to Hanson, this opportunity for clinker import clearly added an additional layer of opportunity for MI and scope for further changes to the market. Hanson drew specific attention to the Movies on Pay TV market investigation, noting that in that case the CC had concluded that changing market dynamics meant that there was no AEC. This was due to the entry of Netflix and LOVEFiLM during the course of the investigation, which led the CC to revise its provisional views. Hanson made the point that in view of HCM's position in cement, RMX and aggregates, it would similarly expect the CC to recognize the competitive impact of the new entrant, particularly in the context of the production capacity of the cement market's latest new entrant being considerably greater than the new market share established by the new entrants in the Movies on Pay TV market investigation.

²¹ [Hanson response to provisional findings](#), paragraph 19.21.

58. [REDACTED] told us that it expected HCM to be an aggressive competitor. This expectation was due to that fact that an entrant buying the divested assets would be a net supplier of cement. It was therefore likely that HCM would impose a considerably greater constraint on those allegedly coordinating than Tarmac would have done previously. Moreover, given current market conditions, an entrant would have to push very hard for profit. In support of these views, [REDACTED] provided us with a non-exhaustive table of 15 [REDACTED] customers and potential customers which had been approached by HCM. The table indicates that in nearly all these cases HCM has offered a lower price than that currently offered by [REDACTED], with an average reduction proposed of around £[REDACTED].
59. Aggregate Industries told us that it did not expect any major change in the competitiveness of the reference market due to the JV.
60. In their response to our provisional findings, several parties, including the top three, submitted evidence on the impact of HCM in the market. We set out those responses, and our comments on them, in paragraphs 8.368 to 8.407.

Performance of HCM in 2013

61. To help us understand the impact of HCM in the GB cement markets, we examined HCM's performance following its entry into the market in January 2013. HCM provided us with information on its trading position in the year to the end of June 2013 and to the end of October 2013, including a comparison against 2013 budget.
62. HCM's 2013 budget set the volume of cement sales for the full year at [REDACTED]. In the year to June 2013, volume sales of cement were [REDACTED], around [REDACTED] for that point in the year. One factor contributing to this [REDACTED]. Figures to October 2013 show that the volume of cement sales was [REDACTED] for that point in the year.
63. In financial terms, the contribution of cement to June 2013 was [REDACTED].²² This was [REDACTED].²³
64. [REDACTED]²⁴
65. During its hearing with us on 24 June 2013, HCM provided us with a brief update on its short-, medium- and long-term strategy. In that context, and in relation to cement, we noted in particular that, in [REDACTED].
66. HCM provided us with a draft paper setting out its outlook for 2014, which included an outline of its budget for 2014. HCM emphasized that, at the time of writing, the figures were being worked on with a view to finalizing and agreeing the budget by mid-December 2013. [REDACTED]

²² In this discussion we use the term 'financial contribution' as used in the management reports HCM shared with us. It is arrived at after deducting fixed costs from the gross profit margin.

²³ The figures are based on the information provided by MI. It told us that [REDACTED].

²⁴ MI told us that the [REDACTED] had had complex effects in cement volume draw. We have not undertaken that analysis here.

Analysis of Hanson's profitability in the supply of GGBS

Introduction

1. The purpose of this appendix is to analyse the profitability of the supply of GGBS by Hanson in GB¹ in accordance with the profitability framework adopted for each of the product markets analysed, as set out in Appendix 4.1. This framework sets out various purposes to which we seek to put the resulting profitability analysis and the methodological approach adopted to derive our chosen measure of profitability.
2. Most facets of the framework for assessing profitability, for example our chosen measure of profitability and the overarching framework to valuing a firm's asset base are common across all the products being investigated and as such are set out in Appendix 4.1. However, where we have tailored our approach specifically for the purposes of analysing the profitability of GGBS, we set out these GGBS-specific methodologies in this appendix.
3. We also explain how we have modelled the adjustments we have needed to make to convert the two inputs into our chosen measure of profitability, namely returns and capital employed prepared on a (modified) historical cost accounting (HCA) basis, on to a current cost accounting (CCA) basis,² the basis which we used in our analysis.
4. We make a distinction between adjustments to the basis of preparation, the need for which can and does vary between the different products, and the scope³ of the operating revenues, costs, assets and liabilities relevant to our analysis, which does not. Furthermore the scope of what falls within our profitability analysis remains unaltered between the HCA and CCA bases of preparation. This means that our analysis of HCA profitability⁴ reflects as far as practically possible our view of what is relevant, rather than necessarily the activities the firm itself would reflect within financial information prepared for its own purposes.
5. When responding to our request for profitability information, Hanson supplied us with a supplementary report that explained, in its view, the key factors that we should take into account when both undertaking and then subsequently interpreting this profitability analysis. We considered this report in detail when preparing this appendix and refer to it as appropriate.
6. We have taken an approach to analysing GGBS profitability that is similar to the approach we had undertaken for Hanson's cement activities, ie restricting the scope of revenues, costs, assets and liabilities to operational assets⁵ and assessing plant and machinery asset values on a current cost basis.

Structure of the appendix

7. This appendix sets out:

¹ Hanson has a depot in Belfast in Northern Ireland which is part of the UK but not GB. For the purposes of this analysis, there is no material distinction between Hanson's UK and GB operations, and therefore there has been no attempt to exclude the Northern Ireland element.

² See second footnote to paragraph 4.14 for an overview explanation of the (modified) HCA and CCA bases of preparation.

³ See Appendix 4.1, paragraphs 60–63.

⁴ As explained in paragraph 68, the unadjusted profitability analysis reflects Hanson's estimation of the fair value as at 2006 and 2007 of its assets and liabilities.

⁵ The scope is set out in Appendix 4.1, paragraphs 60–63.

- (a) a short history of Hanson's/Civil and Marine's GB GGBS activities (paragraphs 8 to 19);
- (b) overview of approach taken to assessing the profitability of Hanson's GB GGBS activities (paragraphs 20 to 63);
- (c) application of our approach to assessing Hanson's GB GGBS profitability (paragraphs 64 to 87);
- (d) results of the GGBS profitability analysis (paragraphs 88 to 89); and
- (e) findings from the GGBS profitability analysis (paragraphs 90 to 93).

A short history of Hanson's/Civil and Marine's GGBS activities

8. Hanson acquired the UK business of Civil and Marine⁶ in March 2006 for £[X] million. Civil and Marine owned the exclusive rights to undertake the grinding of GBS generated as a by-product of iron-making at GB steelworks to produce GGBS for sale in the UK.
9. Civil and Marine was founded by Mike Uren as a small shipping business in 1955. Mike Uren, a civil engineer by professional background, grew the business to become the UK's largest producer of GGBS—which is used as a substitute⁷ for, and input into, cement. The first investment in specialist grinding facilities occurred in 1982 at Purfleet. These facilities were not co-located with a steel works.
10. According to Hanson, Civil and Marine had taken big risks in buying and establishing grinding mills at, or easily accessible to, each of the then four operational steelworks⁸ in order to process GBS into GGBS. Civil and Marine had taken these risks on the basis of securing access to the slag from the steelworks via long-term exclusive contracts. Hanson further explained that Civil and Marine was the company that first marketed GGBS in a big way in the UK. At the time GGBS was not regarded as a generally acceptable product, the main cement substitute at the time being PFA.
11. Hanson further explained that it was only in the early 1990s that it became possible to switch at each individual blast furnace between (a) rapidly water-cooling the molten slag to produce a cementitious product (namely GBS), and (b) air-cooling the molten slag to produce a construction aggregate.
12. In the past most of the blast-furnace slag cement had been produced by grinding the slag and the clinker together. As slag was harder to grind than the clinker this 'inter-grinding' left the slag coarser than the cement, which was the exact opposite of the desirable situation. Grinding the slag separately from the cement had the advantage of permitting the slag and the cement to be ground to their own optimum finenesses. Another innovation was the separate marketing of the GGBS, with the slag and cement being combined downstream, for example, in the concrete mixer. This permitted proportions to be varied to suit the particular job needs. This procedure began in England in the 1970s.⁹

⁶ The legal entity acquired by Hanson was Civil and Marine (Holdings) Ltd.

⁷ www.telegraph.co.uk/finance/2933435/Hanson-shells-out-400m-on-bolt-ons.html.

⁸ A further grinding mill was located at Purfleet on the River Thames near London to which GBS from the Teesside and Port Talbot steelworks could be shipped.

⁹ Donald W Lewis, PE, Chief Engineer, National Slag Association, *History of Slag Cements*, presented at University of Alabama Slag Cement Seminar, April 30 1981, p6:

13. Mike Uren became involved in the commercial production of GGBS as least as early as 1982 when Civil and Marine made its first investment in a grinder at Purfleet. A second followed in 1985. In 1993 he became a director of North East Slag Cement Limited, which obtained the contracts for Scunthorpe and Teeside.^{10,11} Exclusive contracts were negotiated with the producer of GBS at each of the then operational steelworks, Tarmac (now Lafarge Tarmac):
- 1989 Llanwern (near Newport)
 - 1993 Scunthorpe
 - 1993 Teesside (Redcar)
 - 1998 Port Talbot (near Swansea)¹²
 - 1998 Llanwern (contract renegotiated)
 - 1999 Llanwern, Scunthorpe, Teeside and Port Talbot (contract renegotiated with 30-year exclusivity)
14. Further information about the grinding stations associated with these steelworks is set out in Table 4 below. There was an additional investment in a further grinding plant at Purfleet, on the north shores of the River Thames just inside the M25, to serve the London and South-East markets. As well as grinding home-produced GBS at its Purfleet works, Civil and Marine (now Hanson) also grinds into GGBS some GBS imported by sea from ArcelorMittal Ghent (a subsidiary of Mittal Steel) in Belgium.
15. The contracts agreed in 1999 gave Civil and Marine the exclusive right to grind GBS made from slag emanating from GB steelworks into GGBS for sale into the UK market for a further 30 years, ie until 2029.
16. The signing of these exclusive contracts occurred after the investment in some of the existing mills used to grind GBS into GGBS over the period of review. For example, the [X] at Purfleet were constructed in [X] and [X], the [X] associated with the Teesside steelworks was constructed in [X]. Other investment occurred after the signing of the exclusive contracts, most notably the [X] at Purfleet in [X] and the [X] at Scunthorpe in [X].¹³
17. HeidelbergCement acquired Hanson in August 2007, a year or so after Hanson acquired Civil and Marine. Hanson now markets GGBS under the name of Regen.
18. The Llanwern steelworks was permanently closed in 2002. Civil and Marine (now Hanson) continued to grind some GBS at its Llanwern grinding station up until 2008 using GBS transported by road from Port Talbot. Production of steel at Teesside stopped in 2009 but resumed again in 2012. The grinding station at Llanwern was mothballed in 2008 and that at Teesport in 2009. Both these grinding stations remain mothballed, any grinding required of GBS produced at the Teesside steelworks is currently undertaken at Purfleet, to which the GBS can be shipped.

www.nationalslag.org/archive/legacy/nsa_181-6_history_of_slag_cements.pdf. See also the discussion of GGBS under *Developments after 1970*, www.cementkilns.co.uk/cement.html (last edit 12/8/13) for a similar analysis.

¹⁰ North East Slag Cement is now called now Civil & Marine Holdings Ltd, a subsidiary of Civil and Marine Limited.

¹¹ See also Appendix 7.17, footnote to paragraph 9.

¹² This contract (and the one for Llanwern) was with Civil and Marine Slag Cement Ltd.

¹³ See paragraph 80 [X].

19. The steelworks at Scunthorpe and Port Talbot remain operational. Hanson highlighted that there had been speculation about the future of Port Talbot and Scunthorpe. There has also been recent speculation about the future of the Teesside steel plant under its new owners¹⁴ but we understand from our own dealings with SSI that this reflects an overly pessimistic view.^{15,16}

Overview of the approach taken to assessing the profitability of Hanson's GB GGBS activities

20. As explained in Appendix 4.1, we assess profitability in this market investigation by comparing the return on capital employed (ROCE) determined on a current cost basis with its cost of capital over a relatively limited and recent segment of the likely total lifespan of the fixed assets used in production where these assets are long-lived. The cost of capital used is a generic one applicable to all the product markets being investigated, namely aggregates, cement and RMX, as well as GBS and GGBS.
21. The fixed assets needed to commercially produce GGBS from GBS are long-lived and we have taken the same approach to analysing GGBS profitability that we took with our analysis of the profitability of cement and GBS. The fixed assets needed to produce cement tend to have an even longer operational life than that of plant and machinery used to produce GGBS.
22. Hanson challenged the validity of our plan to analyse profitability using the same overall approach adopted for that for cement, for the following reasons:
- (a) assessing profitability over a limited segment of an activity's total life cycle;
 - (b) the use of a generic cost of capital for the assessment of GGBS; and
 - (c) the exclusion of certain intangible assets.

Assessing profitability over a limited segment of an activity's total life cycle

23. Hanson argued that a risk-adjusted returns approach (similar to that used in project appraisal) would be appropriate to calculate profitability as this would have been the thought process at the point where the 30-year contracts were struck and investments made.
24. Our analysis has focused on the profitability of Hanson's investment in GGBS (its period of ownership largely coincides with the period over which we have assessed its profitability). We have therefore been able to assess the returns that Hanson has made during the period of its ownership.
25. We have no reason to believe that the Civil and Marine business accumulated substantial losses prior to Hanson's ownership for which Hanson should continue to be recompensed.
26. We therefore believe that 2007 to 2012, the period over which we have conducted our analysis is appropriate. We also note that it is a period in which UK sales

¹⁴ *The Sunday Times*, 'Teesside Steel in peril', 22 September 2013:

www.thesundaytimes.co.uk/sto/business/Industry/article1317013.ece (article is behind a paywall).

¹⁵ See paragraphs 29 to 31 in Annex E to Appendix 13.5.

¹⁶ See paragraphs 74 & 75 for more information about Teesside.

volumes of GGBS fell by 45 per cent. As a consequence profitability over a complete business cycle is likely to be underestimated. Hanson appears to acknowledge this—see last sentence of paragraph 33.

Use of a generic ‘cost of capital’ for the assessment of GGBS

27. The cost of capital we applied in our provisional findings across all the product markets in this market investigation was 10 per cent. Hanson disagreed with this approach, arguing that a higher cost of capital would be appropriate to reflect a venture as risky as that undertaken by Civil and Marine.

Hanson’s points

28. Hanson argued that the appropriate benchmark cost of capital was the one that applied when the original investments and 30-year contracts were struck. This cost of capital would have been higher than 10 per cent that we had used to assess the profitability of aggregates, cement and RMX for various reasons including: Civil and Marine being a small, private company and the significant risk this type of long-lived, relationship-specific investment would have created.
29. Hanson proposed that a risk premium should be included in the WACC that we used to assess the profitability of its GGBS business ‘given the significant risks that faced the GGBS business at its start (and that it continues to face today)’. In addition Hanson stated that ‘the appropriate benchmark against which to compare returns is the cost of capital that faced the business at the point of making the investment (when the 30 year contracts were entered into), ie the WACC that faced Civil and Marine is the relevant benchmark’.
30. Hanson argued that in relation to GGBS we observed a ‘success’ scenario for which the relevant cost of capital was not our forward-looking ‘market’ cost of capital of 10 per cent, rather one that reflected a risk-adjusted approach to evaluating expected profitability. Hanson noted that this approach was discussed in a paper commissioned by the OFT¹⁷ and Ofcom had explicitly reflected such an approach when interpreting BSkyB’s performance in 2006¹⁸ and Sky’s performance again in 2010.¹⁹
31. Under this approach possible outcomes for an individual project such as an investment in a GGBS grinder, the ultimate demand for the output of which might be so uncertain that the project might fail or, alternatively, be a success, are weighted by their expected probability. This weighted average expected profitability at the outset would then be compared with the cost of capital to decide whether the project would go forward. Accordingly, in the case of success, the project’s ex post return might appear to be above the normal, without that indicating excess returns. Hanson argued that this was the situation we were observing.
32. Hanson identified four different types of ex-ante risk that we should take into account when coming to a view on the relevant cost of capital in this case, namely:

¹⁷ Assessing profitability in competition policy analysis, Economic Discussion Paper 6 July 2003, A report prepared for the Office of Fair Trading by OXERA www.of.gov.uk/shared_of/reports/comp_policy/oft657.pdf.

¹⁸ *Provision of Technical Platform Services—Guidelines and Explanatory Statements*, Ofcom (2006), Annex 4, A4.3–A4.5, September.

¹⁹ *Assessment of Sky’s profitability and cost of capital Annex 3 to Pay TV Statement*, Ofcom (2010), p34.

- (a) establishing sufficient demand risk: GGBS did not have an established market of scale at the point at which Civil and Marine invested;
 - (b) essential input risk: the success of Civil and Marine's (co-located) investments depended on the continued supply of GBS from the relevant steel plant and was at risk if either Tarmac or the steel producer failed to deliver;
 - (c) sunk investment risk: as the grinding mills needed to be located near to the steel plants, that meant that mills were tied to that steel plant; and
 - (d) portfolio risk: Civil and Marine was a small private company without a portfolio of investments/business activities to cushion any failures, and therefore the cost of capital should include a small company premium. It furthermore argued that this premium should also transfer to Hanson when it purchased this business in 2006. Hanson argued that it would have paid Civil and Marine at least the amount Civil and Marine would have expected as a return on its investment.
33. Hanson also highlighted that Civil and Marine would have faced a period of start-up costs and low returns as it sought to develop a market for GGBS. However, our time period of review (2007 to 2012) missed this crucial early phase. Hanson also noted that the profitability of GGBS had fallen very significantly due to the slump in the market with GGBS production having fallen by approximately [X] per cent from the peak.
34. Hanson also highlighted that Civil and Marine had taken a risk in investing in co-located GGBS grinding facilities that sophisticated businesses such as Tarmac or the steel producers at the time had been unwilling to make, and that Tarmac had accepted a 30-year exclusivity period where a shorter period would have been in its interests (and in its gift given its superior bargaining position).

Our assessment of Hanson's points

35. We considered these arguments. The profitability analysis we generated reflected a succession of outcomes in relation to a series of investments in individual grinding stations over the period 1985 to 2003 after the (presumably successful) initial investment in one GGBS grinding station at Purfleet in 1982.²⁰ Table 1 below shows that a series of subsequent investments took place over a period of 20 years, starting with a second (ball-mill) grinder at Purfleet before entering into the first of the exclusive contracts with Tarmac to use GBS produced at GB steelworks in 1989 and then entering into the 30-year exclusive contracts, again with Tarmac, in 1999.

²⁰ We note that there might have been other investments in grinding plant between 1982 and 2003 but such plant had been retired before Hanson acquired Civil and Marine and therefore before 1 January 2007. Whereas the investment by Civil and Marine in the grinding plant at both Llanwern and Port Talbot was undertaken subsequent to the signing of the exclusive contracts, the exclusive contracts for the other steel works either well pre-date the most recent investment listed in Table 1 (Scunthorpe) or the grinding plant was built before the signing of the exclusive contracts (Teesside). This suggests, at least for Scunthorpe, that a previous generation of grinding plants had been in place but subsequently retired. This investment is not relevant for an assessment of profitability over the period 1 January 2007 to 31 December 2012 (were this investment to have been undertaken by Civil and Marine).

TABLE 1 Civil and Marine's investments in grinders in use/available for use as at 1 January 2007

Site	Date	Grinder type
Purfleet	[X]	[X]
Purfleet	[X]	[X]
Teeside	[X]	[X]
Llanwern	[X]	[X]
Port Talbot	[X]	[X]
Purfleet	[X]	[X]
Scunthorpe	[X]	[X]

Source: CC analysis based on information from Hanson ([X] report).

Establishing sufficient demand risk

36. There may have been some risk incurred at the start of Civil and Marine's involvement in GGBS production some 30 years ago when it first invested in a specialist grinding station, which allowed it to launch on to the GB market a ground GBS product (namely GGBS) using GBS imported from Belgium. However, we have received no evidence of the scale of those risks in the early years given that slag had been used in cement for many decades prior to this.²¹ It may be more accurate to characterize Civil and Marine's initial investment at Purfleet in 1982 as an initial project, for which a project 'risk-adjusted' approach might be merited. The second investment followed three years later in a further ball mill, again at Purfleet. We have seen no evidence that any such risk persisted at a material level after the initial investment. We also note that the value of both the initial and second investments in ball mills in the total capital stock was low by 1 January 2007.
37. Given that most of the investment in GGBS grinders occurred after the initial investment, and we do not have any information on which to calibrate the risk-adjusted returns that might apply to that investment in this instance, we have not adjusted the cost of capital we have used in this profitability assessment.

Essential input risk

38. We acknowledge that investment in facilities co-located with a steel plant leads to a reliance on continued supply from that source.²² This essential input risk should in principle be assessed at the point in time at which investments were made, not now when the market outlook for steel may be different. From the standpoint of 2013 it would be impossible to make this assessment about the forward-looking prospects for continued production at a particular steel works when Civil and Marine invested in its co-located plant between 1990 and 2003—see Table 1. We can only note what actually happened afterwards.
39. We have considered annual steel production since 1991 and demand since 1971—see Figures 2 and 3 in Annex H (Steel Industry) to Appendix 13.5. Although inspection of the data in the 20 years covering the investments in co-located facilities listed in Table 1 above shows that UK production of basic oxygen steelmaking, the type of steel production process of which GBS production is a by-product, rose from 12.5 million tonnes in 1991 to 14.0 million tonnes in 1997 before falling to 10.6 million tonnes in 2003, with UK demand supplied from UK mills showing a similar picture,

²¹ Cement Costs, Report by the Committee appointed by the Minister of Works, HMSO (1947), paragraph 6(b), refers to Portland Blast-furnace cement being made by grinding together a Portland cement clinker and granulated blast-furnace slag.

²² This is particularly the case if the steel plant is not located in a strategically important site for the supply of GGBS to the final customer. For example, the Purfleet site, which is not co-located with a steel plant, is able to import GBS by ship and is well-sited to supply GGBS to the biggest source of demand in GB, ie London and the South-East of England.

Hanson has not provided us with evidence of Civil and Marine's contemporaneous expectations of future trends in GB steel production.

40. Since Civil and Marine's investment in GGBS grinding plants there have been two instances of steelworks either being closed or mothballed. Llanwern steelworks were permanently closed in 2002, some ten years after Civil and Marine's investment in the Llanwern grinding plant but that plant continued to be used to grind GBS from Port Talbot up to and including 2008. This plant also continues to be carried in the books of Civil and Marine.
41. Production of steel at Teesside stopped in 2009, some 20 years after the investment in grinding plant. Civil and Marine fully impaired the carrying value of its Teesport grinding station in 2009. Production at the Teesside steel works resumed in 2012.
42. We further note that both the individual steel producers would have had strong incentives to continue with steel production so long as production at the site remained commercially viable and Tarmac likewise, having committed to a substantial location-specific investment, would also have had a strong incentive to make the commercial arrangements work.
43. The fortunes of the steel industry are exposed to the economic cycle in a broadly similar way to those of the heavy materials construction industry, albeit the steel industry's fortunes are more closely related to international demand whereas the heavy materials construction industry relates almost wholly to the GB economic cycle.
44. Using the information we have, it appears to us that the input supply risk, whilst present, cannot be quantified. In any case it does not appear to warrant a cost of capital premium above that we have determined in our generic cost of capital. We therefore did not make an adjustment to the generic cost of capital for essential input risk.

Sunk investment risk

45. The risk associated with sunk investment is also a feature of the cement market, albeit the scale of investment required for an integrated cement plant is several times higher than that for a GGBS plant. We have not made a specific adjustment for this sunk investment risk for cement.²³ We note, however, that the sunk investment risk associated with co-located facilities is also linked to the essential input risk, ie that the particular steel plant continues to produce slag. As explained above in paragraphs 38 to 44 we have not made an adjustment for this essential input risk.
46. We therefore have not made an adjustment to the generic cost of capital for sunk investment risk.

Portfolio risk

47. The logic behind portfolio risk as articulated by Hanson is that a small-company premium should be reflected in the cost of capital, because a small company has no or little portfolio of investments/business activities across which to diversify individual project risks. We, however, consider, in accordance with standard portfolio theory, that investors would be able to diversify away this risk by purchasing, for example, a

²³ We deal with the sunk investment risk in Appendix 7.7, paragraph 46.

portfolio of investments in small company shares and therefore no premium for this project risk would be warranted.²⁴

48. In any case were any 'small company' premium to have applied when Civil and Marine made its investments, we consider that this premium lapsed when Hanson purchased Civil and Marine, not least because Hanson is not a small company. Hanson argued that if Civil and Marine had been offered less than the value of its assets to it (ie Civil and Marine), it would not have sold these assets.
49. In our view, the sale price that Civil and Marine achieved in 2006 reflected what the market would bear at that point. This would have had little to do with any small company cost of capital premium that conceivably might have applied to Civil and Marine when it made its investments. We therefore have not made an adjustment to the generic cost of capital for a 'small company' premium.

Compensation for accumulated 'start-up' losses

50. We also considered whether it would be reasonable for a business that may have accumulated losses in the early years of its life to earn profits substantially in excess of its cost of capital in later years that offset these early losses.
51. We have seen no evidence that the GGBS business acquired by Hanson had accumulated losses in the period before Hanson's ownership. In 2006, when Hanson acquired Civil and Marine, it was a profitable business with a stable customer base and secure supply agreements and was not suffering from low returns.
52. We also note that Hanson did not suffer low returns at the start of its ownership which needed to be recouped later: the time period over which we are assessing its profitability is very similar to the period of Hanson's ownership.
53. We therefore have no reason to believe that Hanson should continue to be rewarded with profits substantially in excess of its cost of capital in the future on this account.

Investments that other businesses chose not to take

54. We note that it was Civil and Marine which invested in grinding facilities, rather than the steel producers or Tarmac, which were much more substantial businesses at the time. Our understanding is that at the time these investments were being made the steel producers regarded slag primarily as a waste by-product which they needed to dispose of as economically as possible, and as a result they remained focused on their core steel business rather than branching out into slag cement. Similarly Tarmac was not a cement producer at the time.²⁵ By way of contrast Civil and Marine was already an established producer of GGBS having invested in two mills at its Purfleet site.
55. We therefore consider that the fact it was Civil and Marine who chose to make these investments, rather than the steel producers or Tarmac, is not necessarily an indication of Civil and Marine having taken on an exceptional risk.

²⁴ This was the view taken by the CC in its regulatory inquiry into Bristol Water in 2010.

²⁵ It was only in 2000 when Anglo American (owner of Buxton Lime and Cement since 1991) bought Tarmac that Tarmac became connected with cement production via Buxton Lime and Cement's cement plant at Tunstead. Tarmac at the time of its acquisition by Anglo American was the buildings material division of conglomerate Wimpey.

Conclusion on use of a 'generic' forward-looking cost of capital for the assessment of GGBS

56. We have not found, nor has Hanson provided us with, any evidence which we could use to estimate the appropriate ex ante cost of capital faced by Civil and Marine in 1982 (or later), but, as explained above, we have considered how these risks might already be reflected in our existing 'generic' analysis. As a result we conclude that the cost of capital we have used in our analysis of Hanson's cement operations is also appropriate to our assessment of GGBS and that it would be wrong to ascribe a higher (or lower) cost of capital in our analysis.
57. We also note that the cost of capital in the DCF analysis used by [X] in the purchase price allocation report commissioned by Hanson²⁶ was 10.3 per cent for the GGBS UK operations and that this is very close to the cost of capital which we consider appropriate to assess its profitability.

Scope of revenues, costs & assets and liabilities included/exclusion of certain intangible assets

58. In line with our previously articulated approach as referred to in paragraph 6 we requested that only the operational revenues, costs, assets and liabilities be included in Hanson's response to our information request. Intangible operational assets would only be considered to be included in the analysis if they were separable, ie they must be capable of being purchased separately from purchasing the business as a whole.²⁷ Hanson argued that we had unjustifiably excluded the intangible asset associated with its capitalized supply agreements with Tarmac.
59. We have therefore looked more closely at what the capitalized supply agreement asset within Hanson's intangible operating assets relates to. The value of the supply agreements was estimated by [X] as part of the exercise to attribute the price Hanson paid for its acquisition of Civil and Marine across the assets and liabilities of the businesses acquired, with any residual which had not been able to be attributed to an asset or liability recognized under international accounting standards being ascribed to goodwill.
60. [X] adopted the 'direct income' approach, commonly referred to as the discounted earnings method under the cost savings method, to estimate the value of the Supply Agreements. This approach identifies the cost savings associated with ownership of a particular asset when non-ownership would lead to the likelihood of higher operating costs.
61. According to [X] the extra costs likely to be incurred if Hanson had to purchase GBS from suppliers other than Tarmac (eg from mainland Europe) would be on average £6 per tonne for the purposes of this calculation. Although these supply agreements had a further 24 years unexpired life at the date Hanson acquired Civil and Marine, [X] limited its evaluation of the extra costs that Hanson would incur should the supply agreements need to be replaced to the period of time that Hanson would need to replace the Tarmac supply of GBS with GBS sourced from another supplier, and not the whole of the length of the exclusive supply agreement.
62. From Hanson's perspective these supply agreements are indeed a valuable intangible asset associated with its purchase of the Civil and Marine business.

²⁶ See paragraph 80 for more details about this report.

²⁷ As explained in Appendix 4.1, paragraph 69.

However, the value to Hanson derives from the fact that any UK-based competitor would face a permanent cost disadvantage for the essential input into the production of GGBS for the next 24 years estimated by [X] to be worth around £6 per tonne of GBS in 2006 prices.

63. As we are attempting to assess the profitability of Hanson as if it operated in a situation where the inputs to the production process were available at the price they would fetch in a competitive market (see Appendix 4.1, paragraph 67), it would be inappropriate to include these assets in our analysis as this would make the exercise circular. We therefore excluded this asset from our analysis.

Application of our approach to assess Hanson's GB GGBS profitability

64. We present profitability assessed on two bases, the first determined using the asset values used by Hanson in its own reporting and the second based on valuing assets on a current cost basis. The rest of this subsection primarily focuses on the adjustments needed to restate the first basis on to the second. However, we also discuss the nature of the asset values used by Hanson in its own reporting.
65. The information provided by Hanson relates to its GGBS activities as carried out from the beginning of 2008 through its subsidiary Civil and Marine Limited. The figures provided for 2011 and 2012, both regarding the profit and loss and balance sheet, have been reconciled to the audited financial statements for 2011 and draft statements for 2012.

The approach taken to determine the current cost values for GGBS assets

66. As explained in Appendix 4.1 we seek to value long-lived assets which are worth replacing using the modern equivalent asset (MEA) principle. Here the gross MEA value is what it would cost to replace an old asset with a technically up-to-date new one with the same service capability, allowing for any differences both in the quality of output and in operating costs. The net MEA value is the depreciated value taking into account the remaining service potential of an old asset compared with a new one.
67. Normally the carrying value of long-lived assets in firms' accounting statements can, among other things, be eroded by the cumulative impact of price inflation over a significant period. However, the GGBS assets acquired by Hanson from Civil and Marine were revalued on to a fair value basis as at March 2006 for the purposes of their incorporation into the then Hanson's group financial statements. These values, suitably further depreciated and/or impaired, have been used for internal management reporting purposes ever since²⁸ and were the values supplied to us in Hanson's information response.

Valuation of tangible fixed assets and associated depreciation

68. For the purpose of this analysis we have adopted two approaches to valuing tangible fixed assets:

²⁸ A subsequent revaluation of these GGBS assets was not deemed to be further needed for HeidelbergCement group reporting purposes when HeidelbergCement acquired Hanson in August 2007 owing to the relatively short lapse in time between the two events.

- (a) At the carrying values used by Hanson for management purposes. These are the values provided by Hanson in its information response. These values relate to the 'fair values'²⁹ as assessed by [X] as at March 2006 when Hanson acquired Civil and Marine and again when HeidelbergCement acquired Hanson in August 2007.³⁰ We refer to this approach as 'based on fair values at 2006/07'.
- (b) At an estimate of the net replacement cost of the tangible assets at each of the five grinding stations now owned by Civil and Marine Limited using Hanson's estimate of the gross cost of replacing the assets it supplied. We refer to this approach as 'on a current cost basis'.
69. Hanson provided us with a report in which it set out its view of the gross replacement cost of the assets, site by site, at each of its GB operational sites.³¹ This report had been prepared by the technical operations manager of its GB GGBS activities, [X]. Hanson explained that he had 25 years' experience in engineering, maintenance, capital projects and operational improvement within the GGBS business. The gross replacement cost estimates reflected a combination of approaches, mainly based on historical costs inflated at 3.3 per cent per year³² but with some reference to the cost of similar equipment acquired more recently. We used the cost figures summarized in this report as an input into our net replacement cost estimates (reduced by depreciation as described below in paragraph 73).
70. A comparison of the values given for plant and machinery assets on the 2006/07 fair value basis (Table 3) and on a current cost basis, ie estimate of net replacement cost (Table 6) shows that there is a significant disparity between these two values.
71. There appears to have been a modest need for further capital investment in the recent past on the part of Hanson. The cost of tangible fixed asset additions in Civil and Marine Limited's statutory accounts has ranged between £[X] and £[X] per year over the period 2008 to 2012.³³

Approach to depreciation

72. Under the first approach the carrying values in Hanson's management accounts already reflected depreciated amounts. Hanson's depreciation methodology is straight-line over asset lives up to 25 years. There was no need to modify the depreciation charges shown in the profit and loss account as these were consistent with the approach to asset valuation in the balance sheet.
73. Under the second approach we modelled depreciated asset values also on the basis of straight-line depreciation but this time across 30 years, the period over which Hanson suggested. We calculated a revised depreciation charge to be consistent with the modelled depreciated asset values.

²⁹ Fair value is the amount which an asset could be exchanged between knowledgeable, willing, in an arm's length transaction (IAS16, the Property Plant and Equipment international accounting standard). In practice fair value can mean either net replacement cost, net realizable value or value in use. The valuation basis for plant and machinery was depreciated replacement cost.

³⁰ Hanson explained that the view taken in August 2007 was that another 'fair value' valuation exercise was not necessary due to the relatively short time that had elapsed since the previous 'fair value' valuation exercise. There had been no further fair valuation exercises since.

³¹ GGBS Plants, Replacement Costs Estimate, 29 August 2013.

³² Under 'assumptions' the report referred to inflation rates 'based on the Bank of England inflation calculator'.

³³ We have not taken into account Hanson's limited investment in its business during the period of review in the modelling of asset values.

Treatment of impairment during the period of review

74. One of the steelworks during the period of review—that at Teesside—was mothballed by its then owner, Tata Steel, in 2009 after the customers who had agreed to buy its steel ended that agreement. In turn Hanson also mothballed its nearby grinding station at Teesport which had up to that time processed all of the GBS output from Teesside. Hanson recognized an impairment of £[redacted] million of its Teesport assets in both its statutory and management accounts in that year.
75. Subsequently Tata Steel was able to sell the Teesside steelworks to SSI who wanted to acquire steel production capacity in the UK to vertically integrate with its downstream operations. When production of steel at Teesside resumed in April 2012, Hanson decided to ship all the GBS output from Teesside to its plant at Purfleet for subsequent processing into GGBS. [redacted]
76. Another of Hanson's grinding plants is co-located within the former steelworks at Llanwern, which closed in 2002. Hanson continued to use its facilities at Llanwern by transporting some of the GBS output of Port Talbot by road to the Llanwern plant to be ground into GGBS. No grinding activity has taken place at Llanwern, however, since 2008 when Hanson mothballed the plant. Hanson has not impaired this plant. In the 2012 profit and loss account figures it supplied us, and which are included in the analysis presented, Hanson identified £[redacted] of operating costs relating to Llanwern, of which £[redacted] related to depreciation.
77. As explained in our cement profitability analysis, our preferred approach towards the treatment of impairment losses is to recognize these losses in our analysis only when the firm itself has impaired the assets in question in its own accounts and/or when the firm has permanently retired the assets. This means that in our analysis across the six years between 2007 and 2012 we have [redacted]. This latter plant is reflected at its depreciated value throughout the period of analysis.

Calculation of profitability on a current cost basis

78. We did not need to make any adjustment to the asset values, and the associated depreciation and impairment charges, provided by Hanson to calculate profitability at the carrying values used by Hanson for management purposes (approach (a) referred to in paragraph 68). However, in order to estimate the net replacement cost of Hanson's assets (approach (b) referred to in paragraph 68) we needed to establish both the dates at which the plant and machinery was acquired at each of its grinding stations and its replacement cost.

Estimation of the net replacement cost of plant and machinery, depreciation and impairment charges

79. Hanson was not able to definitively confirm the dates of Civil and Marine's first investment in grinding stations at each of its locations as Hanson had only acquired the business in 2006. Hanson explained it understood that investments in co-located facilities commenced in 1993 when the first exclusive contract was signed in respect of Scunthorpe. The investments continued through to 1999 when exclusive contracts in respect of GBS output from the other three then operational GB steelworks were

first signed. Some of the historical earlier investment in grinding plant and property may have commenced earlier than 1993.^{34,35}

80. Hanson provided us with a copy of the report it commissioned to allocate the price it had paid for Civil and Marine (Holdings) Ltd across the tangible and intangible assets and liabilities it had acquired, so that it could account for this acquisition in its group accounts in accordance with the relevant international accounting standards, most notably International Financial Reporting Standard (IFRS) 3 on Business Combinations.³⁶ In this report there is a table of the key operational features of the European sites Hanson acquired. For each operational location the mill type is given and the year in which it was built. We have used the years in which each of the mills was built, as provided in this table, as the dates from which the gross values attributed to plant and machinery for each site should be depreciated.
81. We estimated the net replacement cost at 31 December from 2006 (ie as at 1 January 2007) through to 2012 as follows:
- (a) We restated the replacement cost estimates we had been provided as described in paragraph 69 (assumed to be as at 1 January 2013 prices) on to 1 January 2007 prices by deflating these costs for six years by the same annual average inflation rate of 3.3 per cent per year that Hanson had used to restate Civil and Marine's historical investments onto current prices.
 - (b) We modelled the net replacement cost of plant and machinery in 1 January 2007 prices at each balance sheet date on a straight-line depreciation basis³⁷ using the years in which each of the mills had been built as described in paragraph 80 as the date of acquisition for depreciation purposes. We assumed that the assets had a useful economic life of 30 years, the life Hanson told us in its information response that it believed these assets had.
 - (c) We calculated (expected) operating capability maintenance³⁸ (OCM) depreciation charges for each year of our analysis as the difference between the opening and closing balance sheet values.
 - (d) We modelled the impairment charge (ie unexpected depreciation) as the write-off in the year of mothballing of the carrying value of those assets which Hanson impaired in its accounts.
 - (e) Finally we restated all these values (ie net replacement cost estimate, the depreciation charge and the impairment charge) in nominal prices, rather than 1 January 2007 prices. We did this by inflating the costs by 3.3 per cent per year as necessary. 'Holding gains' were calculated as the difference between the nominal change in net asset value between the adjacent balance sheet dates and the OCM depreciation charge in nominal terms.

³⁴ This paragraph reflects the information Hanson told us when we requested its financial information. Since then we have obtained information from other sources and it is the synthesis of both sets of information that is set out elsewhere in this appendix, eg in paragraph 13.

³⁵ The article on the history of slag cement referred to in the footnote to paragraph 12 implies that separate grinding of slag (or GBS) started in England in the 1970s.

³⁶ [§]

³⁷ We applied the same depreciation profile that we applied to cement. See Appendix 7.7, paragraphs 136 to 178 for our reasoning for adopting this profile.

³⁸ Maintenance of the ability to supply the amount of goods and services which a business is able to supply with its existing resources in the relevant period. This definition is as set out in the glossary of the Byatt Report, Volume II, p136.

Treatment of land in the current cost analysis

82. Land was treated separately from plant and machinery as land is not a depreciable asset, ie unlike plant and machinery its value is not 'consumed' with use or the passing of time. As for plant and machinery the values provided by Hanson (this time as at 1 January 2007) were inflated by the generic inflation rate, 3.3 per cent from year to year. The increase in the nominal value of land from year to year was included in the profit and loss as a holding gain.

Restatement of the profit and loss account on a current, rather than a modified historical cost, basis

83. We substituted the values given by Hanson to its plant and machinery assets, and the related depreciation and impairment charges, with the estimates for their equivalents we generated on a current cost basis as described in paragraphs 80 to 81. We did the same for the values given by Hanson to its land values as described in paragraph 82.

Approach taken to central costs

84. When analysing profitability it is important to take account of all costs causally related (but only those costs causally related) to the production, distribution and sale of GGBS into account.
85. Since 2008 (after the acquisition of Hanson by Heidelberg in August 2007) Hanson has attributed [£] per year of costs not incurred at the local operational level (ie not incurred by Civil and Marine Limited) to its GGBS activities. These have been split between costs incurred in the UK by Hanson and a smaller level of costs incurred by Heidelberg. Hanson took a similar approach when attributing 'central' costs to its GB cement activities. Hanson has attributed [£] per year of these 'central' costs to its cement activities since 2008. In revenue terms the GB cement business is roughly worth double the GGBS business (2011 revenues were [£] for cement versus [£] for GGBS), which indicate that Hanson may be over-attributing these costs to its GGBS activities.
86. In its reconciliation between the numbers it supplied us and the numbers appearing in its statutory accounts, Hanson identified some Hanson Quarry Products Europe (HQPE) 'overheads' costs of the order of [£] per year that it books in its statutory accounts. Hanson explained the difference in these costs as being attributable to 'varying accounting methodologies'. It further explained that, although there is a difference in the figures, it had not 'over-attributed' central costs to its GGBS activities.
87. The profitability analysis presented uses Hanson's estimate of central costs incurred by its GGBS activities but which are not incurred at the local operational level by Civil and Marine Limited. In this respect it seems likely that profitability will be understated.

Results of the GGBS profitability analysis

88. Below we provide six tables setting out across the six years from 2007 to 2012 for Hanson's GB GGBS activities:
- (a) the profit and loss account based on 2006/07 fair values (Table 2);
- (b) the balance sheet based on 2006/07 fair values (Table 3);

- (c) the profit and loss account on a current cost basis (Table 5);
- (d) the balance sheet on a current cost basis (Table 6);
- (e) summary financial results based on 2006/07 fair values and calculation of ROCE thereon (Table 7); and
- (f) summary financial results and calculation of ROCE thereon based on current costs (Table 8).

89. There is a further table (Table 4) which sets out a breakdown provided by Hanson of its estimate of the gross replacement cost of the plant and value of the land at its grinding stations and depots. GGBS production volumes at each site over the six years from 2007 to 2012 have also been given in this table.

TABLE 2 Profit and loss account for Hanson's GGBS activities over the period 2007 to 2012 based on 2006/07 fair values

	<i>£ million unless otherwise stated</i>					
	2007	2008	2009	2010	2011	2012
<i>Volumes</i>						
Sales volumes (tonnes millions)	[x]	[x]	[x]	[x]	[x]	[x]
<i>Prices</i>						
Gross unit price (£ per tonne)	[x]	[x]	[x]	[x]	[x]	[x]
<i>Sales value</i>						
Sales	[x]	[x]	[x]	[x]	[x]	[x]
Distribution costs	[x]	[x]	[x]	[x]	[x]	[x]
Net sales	[x]	[x]	[x]	[x]	[x]	[x]
<i>Variable costs</i>						
GBS purchases from Tarmac*	[x]	[x]	[x]	[x]	[x]	[x]
Raw materials other	[x]	[x]	[x]	[x]	[x]	[x]
Electricity	[x]	[x]	[x]	[x]	[x]	[x]
Fuels	[x]	[x]	[x]	[x]	[x]	[x]
Other 'variable' costs	[x]	[x]	[x]	[x]	[x]	[x]
Total 'variable' costs	[x]	[x]	[x]	[x]	[x]	[x]
Gross margin	[x]	[x]	[x]	[x]	[x]	[x]
<i>Fixed costs</i>						
Depreciation†	[x]	[x]	[x]	[x]	[x]	[x]
Impairment on Teesport assets	[x]	[x]	[x]	[x]	[x]	[x]
Wages & salaries	[x]	[x]	[x]	[x]	[x]	[x]
Repairs & maintenance	[x]	[x]	[x]	[x]	[x]	[x]
Other expenses	[x]	[x]	[x]	[x]	[x]	[x]
Restructuring costs	[x]	[x]	[x]	[x]	[x]	[x]
General & administrative costs‡	[x]	[x]	[x]	[x]	[x]	[x]
Other operating income	[x]	[x]	[x]	[x]	[x]	[x]
Subtotal 'fixed' costs	[x]	[x]	[x]	[x]	[x]	[x]
<i>Apportioned costs</i>						
Central costs incurred in the UK	[x]	[x]	[x]	[x]	[x]	[x]
Central costs incurred in Europe	[x]	[x]	[x]	[x]	[x]	[x]
Operating profit	[x]	[x]	[x]	[x]	[x]	[x]

Source: CC analysis based on Hanson's information.

*Hanson was only able to split its purchase of raw material between Tarmac (for GBS) and other suppliers from 2009.

†Depreciation charge is as included in Hanson's response and is based on fair values as at 2006/ 2007.

‡These are the general and administrative costs incurred by the Civil and Marine business.

TABLE 3 Balance sheet for Hanson's GGBS activities over the period 2007 to 2012 based on 2006/07 fair values

	<i>£ million</i>					
	2007	2008	2009	2010	2011	2012
<i>Fixed assets</i>						
Plant & machinery	[X]	[X]	[X]	[X]	[X]	[X]
Impairment on Teesport assets	[X]	[X]	[X]	[X]	[X]	[X]
Land & buildings	[X]	[X]	[X]	[X]	[X]	[X]
Fixtures, fittings etc	[X]	[X]	[X]	[X]	[X]	[X]
<i>Net current assets</i>						
Stock	[X]	[X]	[X]	[X]	[X]	[X]
Trade debtors	[X]	[X]	[X]	[X]	[X]	[X]
Other operational debtors	[X]	[X]	[X]	[X]	[X]	[X]
Accruals and deferred income	[X]	[X]	[X]	[X]	[X]	[X]
Other creditors	[X]	[X]	[X]	[X]	[X]	[X]
Trade creditors	[X]	[X]	[X]	[X]	[X]	[X]
<i>Provisions</i>						
Restoration	[X]	[X]	[X]	[X]	[X]	[X]
Onerous lease + restructuring	[X]	[X]	[X]	[X]	[X]	[X]
<i>Net assets</i>						
At carrying value after impairment	[X]	[X]	[X]	[X]	[X]	[X]
Average capital employed	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based on Hanson's information.

TABLE 5 Profit and loss for Hanson's GGBS activities over the period 2007 to 2012 on a current cost basis

£ million unless otherwise stated

	2007	2008	2009	2010	2011	2012
<i>Volumes</i>						
Sales volumes (tonnes millions)	[x]	[x]	[x]	[x]	[x]	[x]
<i>Prices</i>						
Gross unit price (£ per tonne)	[x]	[x]	[x]	[x]	[x]	[x]
<i>Sales value</i>						
Sales	[x]	[x]	[x]	[x]	[x]	[x]
Distribution costs	[x]	[x]	[x]	[x]	[x]	[x]
Net sales	[x]	[x]	[x]	[x]	[x]	[x]
<i>Variable costs</i>						
GBS purchases from Tarmac*	[x]	[x]	[x]	[x]	[x]	[x]
Raw materials other	[x]	[x]	[x]	[x]	[x]	[x]
Electricity	[x]	[x]	[x]	[x]	[x]	[x]
Fuels	[x]	[x]	[x]	[x]	[x]	[x]
Other 'variable' costs	[x]	[x]	[x]	[x]	[x]	[x]
Total 'variable' costs	[x]	[x]	[x]	[x]	[x]	[x]
Gross margin	[x]	[x]	[x]	[x]	[x]	[x]
<i>Fixed costs</i>						
OCM depreciation†	[x]	[x]	[x]	[x]	[x]	[x]
Holding gains	[x]	[x]	[x]	[x]	[x]	[x]
Impairment on Teesport P&M assets			[x]			
Wages & salaries	[x]	[x]	[x]	[x]	[x]	[x]
Repairs & maintenance	[x]	[x]	[x]	[x]	[x]	[x]
Other expenses	[x]	[x]	[x]	[x]	[x]	[x]
Restructuring costs	[x]	[x]	[x]	[x]	[x]	[x]
General & administrative costs‡	[x]	[x]	[x]	[x]	[x]	[x]
Other operating income	[x]	[x]	[x]	[x]	[x]	[x]
Subtotal 'fixed' costs	[x]	[x]	[x]	[x]	[x]	[x]
<i>Apportioned costs</i>						
Central costs incurred in the UK	[x]	[x]	[x]	[x]	[x]	[x]
Central costs incurred in Europe	[x]	[x]	[x]	[x]	[x]	[x]
Operating profit	[x]	[x]	[x]	[x]	[x]	[x]

Source: CC analysis based on Table 2.

*Hanson was only able to split its purchase of raw material between Tarmac (for GBS) and other suppliers from 2009.
 †OCM (operating capability maintenance) depreciation, holding gains and impairment charges are based on current costs.
 ‡These are the general and administrative costs incurred by the Civil and Marine business.

TABLE 6 Balance sheet for Hanson's GGBS activities over the period 2007 to 2012 on a current cost basis

	£ million					
	2007	2008	2009	2010	2011	2012
<i>Fixed assets</i>						
Plant & Machinery	[x]	[x]	[x]	[x]	[x]	[x]
Land (& Buildings)	[x]	[x]	[x]	[x]	[x]	[x]
Fixtures, fittings etc	[x]	[x]	[x]	[x]	[x]	[x]
<i>Net current assets</i>						
Stock	[x]	[x]	[x]	[x]	[x]	[x]
Trade debtors	[x]	[x]	[x]	[x]	[x]	[x]
Other operational debtors	[x]	[x]	[x]	[x]	[x]	[x]
Accruals and deferred income	[x]	[x]	[x]	[x]	[x]	[x]
Other creditors	[x]	[x]	[x]	[x]	[x]	[x]
Trade creditors	[x]	[x]	[x]	[x]	[x]	[x]
<i>Provisions</i>						
Restoration	[x]	[x]	[x]	[x]	[x]	[x]
Onerous lease + restructuring	[x]	[x]	[x]	[x]	[x]	[x]
<i>Net assets</i>						
At carrying value after impairment	[x]	[x]	[x]	[x]	[x]	[x]
Average capital employed	[x]	[x]	[x]	[x]	[x]	[x]

Source: CC analysis based on Table 3.

TABLE 7 Summary financial results for Hanson's GGBS activities based on 2006/07 fair values and calculation of ROCE thereon over the period 2007 to 2012

	£ million for profits and capital employed/% for ROCE						
	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]	[45-50]
After impact of impairment	[x]	[x]	[x]	[x]	[x]	[x]	[45-50]

Source: CC analysis based on Tables 2 and 3.

Note: Calculated averages do not take account of changes to the value of money over the period of review.

TABLE 8 **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: CC analysis based on Tables 5 and 6.

Note: calculated averages do not take account of changes to the value of money over the period of review.

Findings from the GGBS profitability analysis

90. As shown in Tables 7 and 8 above, profitability (ROCE) measured under the two approaches set out in paragraph 68 over the period of review (2007 to 2012), and 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.
91. As already mentioned in paragraph 70, there is a significant disparity between the book values for tangible fixed assets, which are based on fairly recently (ie 2006 & 2007) assessed fair values, and the estimate of the net replacement cost of these assets. Even so, profitability using these higher values is still substantially above the 10 per cent cost of capital we regard as relevant here.

Trend in profitability over the period of review

92. Volumes of GGBS sales have fallen by over [x] per cent during the period of review and in consequence 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.
93. Hanson has explained that levels of profitability have reduced in recent years as a result of the drop in demand and, because the production of GGBS is very energy intensive (more so than for cement), and most recently by the rise in the cost of electricity by 20 per cent from 2011 to 2012.

Further information on Hanson's accounting treatment of its GB GGBS activities

1. The purpose of this annex is to explain why the GGBS assets and liabilities reflected in Hanson's internal reporting management came to be based on 2006 and 2007 fair values. As previously explained in paragraph 8, Hanson acquired the UK business of Civil and Marine business in March 2006.

The incorporation into Civil and Marine Limited of the trade and net assets of associated with the GGBS activities

2. The term 'hive up' is commonly used to describe a type of restructure within a group of companies when the net assets of, and business undertaken by, a subsidiary are transferred up into the parent company.¹ This is what occurred on 31 December 2007 when Civil and Marine Limited, the legal entity through which Hanson has conducted its GGBS activities since this date, acquired the trade and net assets/net liabilities of:²
 - (a) Civil and Marine Slag Cement Limited (this had the contracts for Port Talbot and Llanwern) for £161 million;
 - (b) Civil and Marine (Holdings) Limited (formerly North East Slag Cement Ltd which had the contracts for Scunthorpe and Teesside) for £25 million;
 - (c) Appleby Group Limited for £74 million (NB Appleby is near Scunthorpe); and
 - (d) The Purfleet Ship to Shore Conveyor Company Limited for £75,000.
3. When a company acquires shares in another company, separate recognition of goodwill is not appropriate. However, where the underlying trade and assets are then subsequently 'hived up' to the parent, companies are required to value the assets (and liabilities) so transferred at their fair value, for example at depreciated replacement cost. According to the analysis shown in the 2007 accounts for Civil and Marine Limited, it was Hanson's judgement that the tangible fixed assets so acquired equated to their existing book values.
4. This may suggest that the book asset values provided to us, and used in this analysis, are fair values. If this were to be the case then Hanson's book value may not be a completely out-of-date proxy for the MEA value for these assets.

¹ Definition taken from www.icaew.com/en/members/advisory-helplines-and-services/technical-faqs/hive-up-accounting.

² Directors' Report, Report and Financial Statements in respect of year ended 31 December 2007 for Civil and Marine Limited, p1.

Differences between Hanson's statutory and internal accounting for its GB GGBS activities

5. The main difference between the information provided by Hanson, and analysed below, and that given in the statutory financial statements, relating to its *operations* appears to relate to the treatment of tangible fixed assets. For the purposes of preparing its statutory accounts for Civil and Marine Limited, Hanson appears to reverse out (the relatively modest) Hanson's fair value adjustments, so that the asset values in the balance sheet and depreciation charges in the profit and loss account are shown at historical cost.

Tarmac's profitability in the supply of GBS

Introduction to the appendix

1. The purpose of this appendix is to analyse the profitability of the supply of GBS by Tarmac in GB over the period 2007 to 2012 in accordance with the profitability framework adopted for each of the product markets analysed, as set out in Appendix 4.1. This framework sets out various purposes to which we seek to put the resulting profitability analysis and the methodological approach adopted to derive our chosen measure of profitability.
2. Most facets of the framework for assessing profitability, for example our chosen measure of profitability and the overarching framework to valuing a firm's asset base are common across all the products being investigated, and as such are set out once in Appendix 4.1. However, where we have tailored our approach specifically for the purposes of analysing the profitability of GBS, we set out these GBS-specific methodologies in this appendix.
3. We also explain how we have modelled the adjustments we have needed to make to convert the two inputs into our chosen measure of profitability, namely returns and capital employed prepared on a (modified) historical cost accounting (HCA) basis, on to a current cost accounting (CCA) basis,¹ the basis which we used in our analysis.
4. We make a distinction between adjustments to the basis of preparation, the need for which can and does vary between the different products, and the scope² of the operating revenues, costs, assets and liabilities relevant to our analysis, which does not. Furthermore the scope of what falls within our profitability analysis remains unaltered between the HCA and CCA bases of preparation. This means that any analysis of HCA profitability we present reflects as far as practically possible our view of what is relevant, rather than necessarily the activities the firm itself would reflect within financial information prepared for its own purposes.
5. Our analysis uses data supplied by Lafarge Tarmac.³ In our information request to Lafarge Tarmac we noted that we intended to take an approach to analysing GBS profitability similar to the approach we had undertaken for its cement activities ie restricting the scope of revenues, costs, assets and liabilities to operational assets and assessing plant and machinery asset values on a current cost basis.

Structure of the appendix

6. The rest of this appendix sets out:
 - (a) a short history of Tarmac's GBS activities (paragraphs 7 to 14);
 - (b) approach taken to analysing GBS profitability (paragraphs 15 to 27);

¹ See the second footnote to paragraph 4.14 of the provisional findings for an overview explanation of the (modified) HCA and CCA bases of preparation.

² See Appendix 4.1, paragraphs 60–63.

³ The information request we sent to obtain the information necessary to conduct this analysis of Tarmac's GBS activities was sent to Lafarge Tarmac, the JV between Lafarge and the Tarmac element of the Anglo American's group activities, which came into being after the end of 2012.

(c) results of the GBS profitability analysis (paragraphs 28 to 29); and

(d) findings from the GBS profitability analysis (paragraphs 31 to 32).

A short history of Tarmac's GBS activities

7. GBS is one of two construction material products that can be generated as a by-product of iron-making at steel works. GBS is the glassy, granular product resulting from the rapid⁴ quenching of the molten slag. Quenching with water is the most common process, but air or combinations of air and water may be used. The slag glass, once ground into GGBS, consists of the same major oxides as Portland cement (but relative proportions differ considerably), has excellent hydraulic properties, and with a suitable activator sets in a manner similar to Portland cement.⁵
8. In contrast to the history of Hanson's/Civil and Marine's involvement in the production of GGBS there is not so much information regarding the history of Tarmac's contracts with the steelworks to produce the water-cooled slag by-product. However, there has been a much longer history of GBS production in the UK than there has been of stand-alone grinding of GBS into GGBS.
9. The generation of GBS and the subsequent production of Portland blast furnace cement may have been undertaken by the same company/within the same corporate group.⁶
10. It was only in the early 1990s that it became possible to switch at each individual blast furnace between (a) rapidly cooling the molten slag to produce a cementitious product (namely GBS), and (b) air-cooling the molten slag to produce a construction aggregate.
11. Tarmac, in parallel with negotiations over the supply of GBS to Civil and Marine, negotiated with the then four operational steelworks to attach its granulators to the iron blast furnaces so that it could produce GBS. These negotiations resulted in a 30-year exclusive deal (between 1999 and 2029) whereby Tarmac was required to process and dispose of all of the slag generated by the steelworks. Its contracts with Civil and Marine (now Hanson) required Tarmac, subject to production of the slag by the steel producers, to generate sufficient GBS to satisfy Civil and Marine's demands. Tarmac could use any spare molten slag capacity to (a) generate a stockpile of GBS; (b) produce air-cooled slag which could be used like any other ordinary aggregate; and (c) supply a third party which could produce GGBS, Portland blast furnace or other cementitious products but not within GB/UK, nor sell the resulting product back into GB/UK.
12. Exclusive contracts were negotiated in respect of each of the then operational steelworks via East Coast Slag Products Limited and Cambrian Stone Limited:⁷

1990 Scunthorpe (contract renegotiated in 1999)

⁴ The alternative product is generated by air-cooling. The air-cooled slag has little or no cementitious properties and is primarily utilized as a mineral aggregate used in all types of construction.

⁵ Donald W Lewis, PE, Chief Engineer, National Slag Association, *History of Slag Cements*, presented at the University of Alabama Slag Cement Seminar, 30 April 1981, p6:

www.nationalslag.org/archive/legacy/nsa_181-6_history_of_slag_cements.pdf.

⁶ The North East Slag Company, the company which subsequently became Civil and Marine (Holdings) Ltd and has the contracts to grind GBS into GGBS at Scunthorpe and Teesport, purchased on 9 November 1993, the assets and undertakings of East Coast Slag Products Limited. This latter company subsequently entered into contracts with British Steel to produce GBS.

⁷ The contractual relationship between Cambrian Stone (now Lafarge Tarmac) and the steel works owner (then British Steel), which relate to Port Talbot and Llanwern steelworks, appears to have started in 1987 or even earlier.

- 1990 Teesside (Redcar)
- 1998 Port Talbot (near Swansea)
- 1998 Llanwern (near Newport)
- 1999 All these contracts were renegotiated with 30-year exclusivity
13. Tarmac was absorbed into the JV between Lafarge and Anglo American at the beginning of 2013, after the end of the period of review (2007 to 2012 inclusive) and so it is now Lafarge Tarmac, the name of the JV, which holds the exclusive contracts with the steelworks and Hanson.
14. The Llanwern steel works was permanently closed in 2002. Production of steel at Teesside stopped in 2009 but resumed again in 2012. The steelworks at Scunthorpe and Port Talbot remain operational although in the current recession there is some talk of them closing down.⁸

Approach taken to analysing GBS profitability

15. We assess Tarmac's profitability in GBS by comparing its return on capital employed (ROCE) with its cost of capital. The cost of capital we have applied across all the product markets analysed in this market investigation was 10 per cent.
16. We have assessed the value of capital employed on three different bases as explained further in paragraph 19.

Scope of revenues, costs & assets and liabilities included

17. [X] there is no difference between the assets and liabilities Lafarge Tarmac has supplied us with and the (operational) assets and liabilities included in our profitability analysis.
18. Lafarge Tarmac has provided a partial reconciliation between the values it has provided us for its operational assets and liabilities and the values included in the two relevant sets of statutory financial statements for 2011 for East Coast Slags Product Limited/Cambrian Stone Limited. The former entity has the contracts for Teesside and Scunthorpe whereas the latter has the contract for Port Talbot and pre-2002 for Llanwern. We have assumed that the assets at Llanwern were written off when the steelworks there closed down.

Valuation of tangible fixed assets and associated depreciation and impairment charges

19. For the purpose of this analysis three approaches have been taken to valuing tangible fixed assets:
- (a) At the book (or carrying) values used by Tarmac. These are the values provided by Lafarge Tarmac in its information response. These have been prepared on the basis of historical cost.

⁸ See also Appendix 7.16, paragraph 19.

(b) At an estimate of the CCA⁹ value assuming a 30-year asset life,¹⁰ and that the assets are on average 15 years old, and each granulator costs £16 million, an average of the £12–20 million range estimate of the replacement cost of each granulator provided by Lafarge Tarmac in its response.

(c) As (b) above but assuming the upper figure of £20 million per granulator.

20. The approach adopted for estimating the CCA values reflects a simplified approach where we use a point estimate. As confirmed by Lafarge Tarmac the granulator is a composite asset with some major engineering parts, such as the drum, having a different expected useful life to that of other major engineering parts (which would include the shell) of the broader asset. In addition major refurbishment work is required from time to time, which, for example, includes replacement of the de-watering drum drives, replacement of the exhaust chimney inclusive of fitting of water sprays, together with major refurbishment works on the two sets of molten slag runners. In the absence of being provided with a breakdown of the cost of the major engineering parts/shell for a 'typical' granulator and their respective expected useful economic lives, we have not attempted to factor these capital expenditures into our estimate of capital employed. In respect of this sort of expenditure our estimate of capital employed is likely to be an underestimate.
21. In keeping with the simplified evaluation of profitability of GBS supply, we did not deflate Lafarge Tarmac's estimate of the replacement cost of a granulator, assumed to be in 2013 prices, into the prices of each year falling within the period of review.
22. No current cost value was placed on the single pelletizer operated by Tarmac. As explained in paragraph 25 (and shown in Table 1) this technology is quite old now, and is therefore likely to have a low depreciated replacement cost in any case.
23. No adjustment has been made to depreciation as 1/30 of the *gross* replacement cost is £1.3–1.7 million a year, a figure which is broadly in keeping with the values shown in the profit and loss account (see Table 2).

Note about the information given by Lafarge Tarmac re its specialized plant and machinery at GB iron blast furnaces

24. Lafarge Tarmac gave us more information about its plant at the iron blast furnaces as shown in the following table.

⁹ In this case the CCA value would be depreciated replacement cost.

¹⁰ Lafarge Tarmac told us that the economic life of any individual granulator would be the same as the steelworks' blast furnaces to which it is attached. Subsequently Lafarge Tarmac told us that all capital expenditure relating to granulators was treated as one category of expenditure, and was depreciated usually over a 20-year period. We have assumed for the purposes of this analysis a 30-year life in line with the expected economic asset life ascribed by Hanson to its GGBS grinding mills.

TABLE 1 Analysis of granulators/pelletizers over the period 2007 to 2012

Site	Blast furnace	Granulation type	Granulate or pelletizer	Capacity (Mt)	Year installed	Year last rebuild	Operational status (running/mothballed)						First ½ 2013
							2007	2008	2009	2010	2011	2012	
Port Talbot	No4	Paul Wurth INBA system	Granulator	0.5	1997	2013	[X]	[X]	[X]	[X]	[X]	[X]	[X]
	No5	Paul Wurth INBA system	Granulator	0.5	2002		[X]	[X]	[X]	[X]	[X]	[X]	[X]
Teesside	Yes	Cold water	Granulator	0.5	2000	2012	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Teesside	Yes	Cold water	Pelletizer	0.5	1975	2012	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Scunthorpe	Queen Bess	Cold water	Granulator	0.2	2000		[X]	[X]	[X]	[X]	[X]	[X]	[X]
Scunthorpe	Queen Anne	Warm water	Granulator	0.5	1984	Drum 2012	[X]	[X]	[X]	[X]	[X]	[X]	[X]
	Queen Victoria												

Source: CC analysis based on Lafarge Tarmac information.

Notes:

1. Capacity is nameplate capacity, actual throughput is limited both by the capacity of the blast furnace and, given this capacity, the quantity of the slag produced. Tarmac's own target for throughput is approximately 85 per cent of the nameplate capacity.
2. [X] indicates the plant was operational; [X] that the plant was mothballed.

25. It is noteworthy that some of the granulators/pelletizers pre-date the signing of the exclusive contracts. There are two types of plant that can produce slag with cementitious properties. The pelletizer is an older piece of technology that has been superseded over the years, with granulators now being the kit used across the industry. Hanson no longer purchases any pelletized slag.

Approach taken to central costs

26. When analysing profitability it is important to take account of all costs causally related (but only those costs causally related) to the production, distribution and sale of GBS into account.
27. It appears that Lafarge Tarmac has attributed some additional costs under the label of 'centrally attributed support costs' ranging between £[~~XX~~] million and £[~~XX~~] million per year. [~~XX~~]

Results of the profitability analysis

28. Below we provide four tables setting out across the six years from 2007 to 2012:
- (a) the profit and loss account for GBS activities (Table 2);
 - (b) the balance sheet for GBS activities (Table 3). The values given for individual assets or liabilities reflect the values provided by Lafarge Tarmac;
 - (c) the estimates of Tarmac's total net assets using the estimates of the net replacement value of its plant and machinery fixed assets as set out in Table 4 (Table 5); and
 - (d) the value of capital employed based on the three bases explained in paragraph 19 and the ROCE generated using these values (Table 6).
29. We also present the estimates of the gross and net replacement value of Tarmac's plant and machinery fixed assets at a single point in time (Table 4).

TABLE 2 Profit and loss account for Tarmac's GBS activities over the period 2007 to 2012

£ million unless otherwise stated

	2007	2008	2009	2010	2011	2012
<i>Volumes</i>						
Sales volume (tonnes millions)	[X]	[X]	[X]	[X]	[X]	[X]
<i>Prices</i>						
Gross unit price (£ per tonnes)	[X]	[X]	[X]	[X]	[X]	[X]
<i>Sales value</i>						
Sales	[X]	[X]	[X]	[X]	[X]	[X]
Distribution costs	[X]	[X]	[X]	[X]	[X]	[X]
Net sales	[X]	[X]	[X]	[X]	[X]	[X]
<i>'Variable' costs</i>						
Blastfurnace slag from steelworks	[X]	[X]	[X]	[X]	[X]	[X]
Energy	[X]	[X]	[X]	[X]	[X]	[X]
Load & haul	[X]	[X]	[X]	[X]	[X]	[X]
Other variable costs	[X]	[X]	[X]	[X]	[X]	[X]
Contract crushing	[X]	[X]	[X]	[X]	[X]	[X]
Other materials	[X]	[X]	[X]	[X]	[X]	[X]
Total 'variable' costs	[X]	[X]	[X]	[X]	[X]	[X]
Gross margin	[X]	[X]	[X]	[X]	[X]	[X]
<i>'Fixed' costs</i>						
Repairs & maintenance	[X]	[X]	[X]	[X]	[X]	[X]
Depreciation of tangible fixed assets	[X]	[X]	[X]	[X]	[X]	[X]
Plant hire	[X]	[X]	[X]	[X]	[X]	[X]
Centrally attributed support costs	[X]	[X]	[X]	[X]	[X]	[X]
Payroll	[X]	[X]	[X]	[X]	[X]	[X]
Legal & professional	[X]	[X]	[X]	[X]	[X]	[X]
Rent & rates	[X]	[X]	[X]	[X]	[X]	[X]
Sundry other 'fixed' costs	[X]	[X]	[X]	[X]	[X]	[X]
Stock movement	[X]	[X]	[X]	[X]	[X]	[X]
Total 'fixed' costs	[X]	[X]	[X]	[X]	[X]	[X]
Operating profit	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based on Lafarge Tarmac information.

30. There is a spike in depreciation in 2009. Depreciation was accelerated in 2009 for the Teesport assets as a consequence of the mothballing of the Teesside blast furnace by its then owner of the steelworks.

TABLE 3 Balance sheet for Tarmac's GBS activities over the period 2007 to 2012

	£ million					
	2007	2008	2009	2010	2011	2012
<i>Tangible fixed assets</i>						
Plant & machinery	[X]	[X]	[X]	[X]	[X]	[X]
Assets under course of construction	[X]	[X]	[X]	[X]	[X]	[X]
Land & buildings	[X]	[X]	[X]	[X]	[X]	[X]
<i>Current assets</i>						
Stock	[X]	[X]	[X]	[X]	[X]	[X]
Trade & other receivables	[X]	[X]	[X]	[X]	[X]	[X]
Prepayments and accrued income	[X]	[X]	[X]	[X]	[X]	[X]
Operating debtors—non-trade	[X]	[X]	[X]	[X]	[X]	[X]
Operating debtors—inter-company	[X]	[X]	[X]	[X]	[X]	[X]
<i>Current liabilities</i>						
Operating creditors—trade	[X]	[X]	[X]	[X]	[X]	[X]
Accruals	[X]	[X]	[X]	[X]	[X]	[X]
Operating creditors—non-trade	[X]	[X]	[X]	[X]	[X]	[X]
Other	[X]	[X]	[X]	[X]	[X]	[X]
Operating creditors—inter-company	[X]	[X]	[X]	[X]	[X]	[X]
<i>Provisions</i>						
[None provided by Lafarge Tarmac]	-	-	-	-	-	-
<i>Net assets</i>						
At HCA values	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based on Lafarge Tarmac information.

TABLE 4 Estimate of gross and net replacement cost of specialized plant and machinery at each blast furnace using Lafarge Tarmac's range estimate of the cost of replacing each granulator

	£ million (2013 prices)	
Unit replacement cost of granulator	16.0	20.0
Total gross replacement cost (ie x5)	80.0	100.0
Total net replacement cost (ie /2)	40.0	50.0

Source: CC analysis based on Lafarge Tarmac information.

TABLE 5 Estimates of Tarmac's total net assets using the estimates of the net replacement value of its plant and machinery fixed assets over the period 2007 to 2012

	£ million					
	2007	2008	2009	2010	2011	2012
<i>Plant and machinery</i>						
HCA	[X]	[X]	[X]	[X]	[X]	[X]
CCA I	[X]	[X]	[X]	[X]	[X]	[X]
CCA II	[X]	[X]	[X]	[X]	[X]	[X]
<i>Delta</i>						
CCA I over HCA	[X]	[X]	[X]	[X]	[X]	[X]
CCA II over HCA	[X]	[X]	[X]	[X]	[X]	[X]
<i>Total net assets</i>						
HCA	[X]	[X]	[X]	[X]	[X]	[X]
CCA I	[X]	[X]	[X]	[X]	[X]	[X]
CCA II	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based Tables 3 and 4.

Note: HCA = historical cost accounting (value); CCA = current cost accounting (value)—in this case depreciated replacement cost.

TABLE 6 Measures of capital employed for Tarmac's GBS activities and ROCEs based thereon over the period 2007 to 2012

	£ million for operating profits and total net assets/ % for ROCE					
	2007	2008	2009	2010	2011	2012
<i>Operating profit</i>						
HCA / CCA basis	[X]	[X]	[X]	[X]	[X]	[X]
<i>Total net assets</i>						
HCA	[X]	[X]	[X]	[X]	[X]	[X]
CCA I*	[X]	[X]	[X]	[X]	[X]	[X]
CCA II*	[X]	[X]	[X]	[X]	[X]	[X]
<i>ROCE (%) on</i>						
HCA net assets	[X]	[X]	[X]	[X]	[X]	[X]
CCA I net assets	[X]	[X]	[X]	[X]	[X]	[X]
CCA II net assets	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based on Tables 2, 3 and 5.

*Based on Tarmac's estimate of the replacement cost of each of its five granulators divided by 2 (ie assuming the assets are half way through their useful lives if one were to assume straight line depreciation). CCA I assumes that the gross replacement cost of each granulator is £16 million, and CCA II assumes that this figure is £20 million.

Findings

31. Profitability (ROCE) when measured on a the simplified CCA basis as explained in paragraphs 19 to 23 calculated over the period 2007 to 2012, suggests that returns are broadly in line with the estimate of GB cement producers' cost of capital we have previously used in our profitability assessment of the relevant markets averaged over the period of review (10 per cent).

Trend in profitability over the period of review

32. The absolute level of profits has been relatively constant despite a drop in volumes of 30 per cent across the period of review, perhaps reflecting the formula negotiated between Tarmac and Civil and Marine (now Hanson). The level of profits was relatively small in absolute terms (ie [X] million per year) compared with that earned by Hanson for GGBS, ie £[X] million per year before impairments, £[X] million after impairments).

Internal documentary evidence: methodology

1. In paragraphs 8.18 to 8.157 we describe what we observed from a body of documentary evidence we gathered from the Majors during our investigation. We discuss three categories of documents: ‘the 2008 documents’, ‘the strategy documents’; and ‘the 2012 documents’. In this appendix we provide further information on those documents. In relation to each category of documents, we describe the nature of the documents, the process for gathering them and how we used that evidence in our investigation.

The 2008 documents

2. The 2008 documents are documents provided by Lafarge, Hanson, Cemex and Aggregate Industries relating in the main¹ to the period 2002 to 2008. They include emails, strategy and other business documents. They do not exclusively cover cement, though our focus has been on those documents relating to cement. In the following paragraphs we explain the background to the request for these documents and how we used them in our review.
3. [REDACTED]^{2,3,4,5}
4. [REDACTED]
5. We conducted an initial review of the 2008 documents and identified certain general points of interest or ‘themes’ which emerged from them. Those themes included the following:
 - (a) pricing strategy;
 - (b) market share;
 - (c) cross-sales;
 - (d) verticalization;
 - (e) imports; and
 - (f) senior level business contacts between the Majors.

Within those themes we identified certain behaviours.
6. We provided a document setting out these themes to Lafarge, Cemex, Hanson and Aggregate Industries for comment, together with some selected extracts of their own internal documents that appeared to show the behaviours concerned taking place in practice. We also asked each of these parties some questions on their own documents during our hearings with them. We published a non-confidential version of

¹ There are a small number of documents that predate 2002 or are undated. There are only a limited number of documents that predate 2005.

² [REDACTED]
³ [REDACTED]
⁴ [REDACTED]
⁵ [REDACTED]

this working paper setting out the themes to enable any interested parties to comment.

7. 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. Parties' advisers were provided with access to this chronology and the relevant underlying internal documents, in a data room⁶ held shortly after publication of our provisional findings.
8. We set out in paragraphs 8.36 to 8.74 what we observed from the 2008 documents.

The strategy documents

9. The strategy documents are documents relating to each of the Majors' business strategies and business planning created mainly during the period 2009⁷ to 2011, of which some are forward looking. In the following paragraphs, we explain the background to the request for these documents and how we used them in our review.
10. As part of our standard document request at the outset of our investigation, we requested pre-existing strategy plans, business plans and other documents relevant to the Majors' strategy that were produced in the previous three years at a local and a national level. The request was not specific to strategy documents relating to cement. We outline below broadly the scale and nature of those documents we received relating to cement.
11. Hanson provided 30 strategy documents covering cement, which covered the period 2009 to 2011, as well as some forward-looking documents covering the period up to 2015.
12. Cemex provided five strategy documents covering cement. The documents were from 2009, 2010 and forward looking over the period 2011 to 2015.
13. Lafarge provided four strategy documents specifically covering cement: a 'Cement Strategic Base File' including 'Strategic Reviews' for the years 2009 to 2011 inclusive as well as a 'Western Europe – UK 2011–2015 Marketing Sales Plan'. A number of the documents provided on other product categories also included information on cement. Lafarge also subsequently provided a 2009 document and a 2010 document and presentation in addition.
14. Aggregate Industries provided many strategy documents, including strategic business reviews and business plans, and a relatively large number of risk assessment documents (separately for Aggregates, RMX, Cement, Corporate risk) that cover the years 2007 to 2011.
15. Tarmac provided five strategy documents, which covered its strategy plans for 2012 for four regions (West, North & Scotland, South East and Central). While all documents contained specific strategies for aggregates and concrete, none contained cement-specific strategies.

⁶ The data room was a secure room at the CC's premises to which access was only granted to parties' advisers once they had provided appropriate undertakings regarding inter alia confidentiality.

⁷ Some of the Lafarge documents are from 2008.

16. We reviewed these strategy documents. Given that the periods covered by these documents overlap to a great extent with periods covered by the 2012 documents described below, we describe what we observe from the 2012 documents and the strategy documents together in paragraphs 8.78 to 8.155.

The 2012 documents

17. The 2012 documents comprise emails and their attachments obtained from each of the Majors relating to the period from August 2010 to September 2012. In the following paragraphs we explain the background to the request for these documents and how we used them in our review.
18. Following the initial review of the 2008 documents, in November 2012 we sent the Majors a request for internal documents in relation to cement. This request was split into two parts: 'Request 1' asked for all emails sent between the Majors by certain 'named postholders' and 'Request 2' asked, for each 'named postholder', for all internal emails which contained certain key search terms. The document request built on our previous analysis of the 2008 documents.
19. 'Request 1' was designed to provide documentary evidence on commercial negotiations between the Majors for cement sales.
20. 'Request 2' was designed to provide us with internal documentary evidence which could indicate whether any of the behaviours we had identified in our earlier working paper on the 2008 documents (referred to in paragraph 6 above) had continued after 2008.
21. We requested documents for the period 1 August 2010 to 30 September 2012 inclusive.
22. To make the request as targeted and proportionate as possible, we asked for documents for certain 'named postholders'—essentially, the Chief Executive Officer/ Managing Director of the UK business, the senior cement sales directors/managers (and in some cases the cement strategy managers), and the head of the business's RMX division (and in some cases the key cement procurement managers).
23. Aggregate Industries, Tarmac and Hanson all raised a number of questions concerning the document request and, following discussions with these parties, we agreed to some amendments to the document request in order to narrow the request. Cemex was unable to provide us with documents covering the full date range citing its corporate document retention policy. Further details are provided below for each party.
24. Lafarge provided us with 1,452 documents in response to Request 1 and 1,150 documents in response to Request 2.
25. The postholders for Lafarge were:⁸
 - (a) [Senior Executive], [redacted] (906, 282);
 - (b) [Senior Cement Executive], [redacted] (19—each document is more than one unique email);

⁸ The numbers in parentheses are, respectively, the numbers of responsive documents which were submitted for each postholder in respect of Request 1 and Request 2.

- (c) [Senior Cement Executive], [REDACTED] (125, 216);
 - (d) [Senior Cement Executive], [REDACTED] (5, 122);
 - (e) [Senior Cement Employee], [REDACTED] (3 across both requests); and
 - (f) [Senior RMX Executive], [REDACTED] (331, 530).
26. Hanson provided us with 11,804 documents across both Request 1 and Request 2.
27. The postholders for Hanson were:⁹
- (a) [Senior Executive]: [REDACTED] for the whole period (850);
 - (b) [Senior Cement Executive]: [REDACTED] (623); [REDACTED] (33);
 - (c) [Senior RMX Executive]: [REDACTED] (160); [REDACTED] held this role for [REDACTED] until a replacement for [REDACTED] was appointed; [REDACTED] then appointed and held this role for [REDACTED] (475);
 - (d) [Senior Cement Executive]: [REDACTED] (2,127); and
 - (e) [Senior Cement Executive]: [REDACTED] (2,108).
28. Cemex provided us with 113¹⁰ documents in response to Request 1 and 513 documents in response to Request 2.
29. The postholders for Cemex were:¹¹
- (a) [Senior Executive]: 1 [REDACTED] (0, 0); [REDACTED] (7, 170);
 - (b) [Senior Cement Executive]: [REDACTED] (0, 4);
 - (c) [Senior Cement Executive]: [REDACTED] (0, 0); [REDACTED] (62, 211);
 - (d) [Senior Readymix Executive]: [REDACTED] (1, 9); and
 - (e) [Senior Cement Executive]: [REDACTED] (42, 120).
30. Cemex informed us that according to its 'Information Retention Policy' (last updated in December 2009 and applicable across its global business), emails were retained on a user's 'live' email system for 30 days after which they were automatically deleted. Automatically deleted emails are retained for a further 30 days on a server in Monterrey, Mexico, after which they are then deleted permanently and are irrecoverable. If a user has him/herself sent the email to 'trash' (before automatic deletion) and emptied the 'trash', then the relevant email(s) are also irrecoverable. When an employee leaves Cemex, his/her laptop is wiped within weeks of their leaving the business in order that it can be allocated to his/her replacement or another employee. Therefore, unless a user has printed an email or saved it in some other way, emails from calendar year 2011 are likely not to exist any longer. According to Cemex, a similar 30-day policy applies to most other Cemex documentation whether held electronically or in hard copy.

⁹ The numbers of responsive documents for each postholder are estimated as Hanson was unable to de-duplicate documents.

¹⁰ The numbers of documents are estimated as Cemex supplied single PDFs containing multiple documents for each postholder.

¹¹ The numbers in parentheses are, respectively, estimates of the numbers of responsive documents which were submitted for each postholder in respect of Request 1 and Request 2.

31. Aggregate Industries provided us with 736 documents in response to Request 1 and 785 documents in response to Request 2.
32. The postholders for Aggregate Industries were:
 - (a) [Senior Executive]: [REDACTED];
 - (b) [Senior Aggregates and Cement Executive]: [REDACTED] & [REDACTED];
 - (c) [Senior Executive]: [REDACTED] & [REDACTED]; and
 - (d) [Senior Executive]: [REDACTED], [REDACTED] & [REDACTED].
33. Tarmac provided us with approximately 2,000 documents.
34. The postholders for Tarmac were:
 - (a) [Senior Executive]—[REDACTED] (3);¹²
 - (b) [Senior Cement Executive]: [REDACTED] (341); [REDACTED] (20);
 - (c) [Senior Cement Executive]—[REDACTED] (324);
 - (d) [Senior Cement Executive]—[REDACTED] (616); and
 - (e) [Senior Cement Employee]—[REDACTED] (0); [REDACTED] (0); [REDACTED] (14); [REDACTED] (719).
35. We conducted an initial review of these documents, focusing on extracts of those 2012 documents that suggested the continuance of some of the behaviours identified in the themes arising from our analysis of the 2008 documents. We also noted certain instances where documents provided useful insights into a company's view of the market in which it operated or particular market conditions. We provided to each Major a document setting out (a) general themes based on the documents as a whole and (b) specific themes based on documents of the Major concerned, together with relevant extracts from its own documents. We published a non-confidential version of the document setting out the themes to enable any interested parties to comment.
36. 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. We prepared a chronology covering key documents from Hanson, Cemex and Lafarge (see Appendix 8.3). We prepared further chronologies setting out separately certain documents of interest for each of Tarmac and Aggregate Industries (see Appendix 8.4). As with the 2008 documents, parties' advisers were provided with access to these chronologies and the relevant underlying internal documents, in a data room held shortly after publication of our provisional findings.
37. We set out in paragraphs 8.78 to 8.155 what we observed from the 2012 documents.

¹² The numbers in parentheses are estimates of the numbers of responsive documents which were submitted for each postholder.

2008 documents: chronology

1. The following chronology relates to certain 2008 documents (see Appendix 8.1). During the period covered by the 2008 documents there were a number of acquisitions and consolidations in relation to the UK cement Majors (see Appendix 3.1 for a timeline of the key mergers and acquisitions affecting the Majors from 1990 to the present day). Notably, Hanson did not have any GB cement production capability until its acquisition by Heidelberg in 2007. In this appendix we have used the name of the relevant entity and in brackets the name of the Major of which it now forms a part.
2. In Annex A to its response to our provisional findings, Hanson made certain comments about our allegedly selective treatment of some of the documents outlined in this chronology. At the appropriate point in this appendix, we have indicated the text highlighted by Hanson in bold and addressed the points made by Hanson in relation to those documents.



2012 documents: chronology—Cemex, Hanson and Lafarge

1. The following chronology relates to certain 2012 documents (see Appendix 8.1) submitted by Cemex, Hanson and Lafarge.



2012 documents: chronologies—Aggregate Industries and Tarmac

Introduction

1. The following chronologies relate to certain 2012 documents (see Appendix 8.1) submitted by each of Aggregate Industries and Tarmac.

[✂]

The role of vertical integration in facilitating coordination in the GB cement markets

Introduction

1. In this appendix, we consider in more detail whether coordination is likely to be facilitated by vertical integration compared with a situation where there is no such vertical integration. Specifically, we analyse how vertical integration is likely to affect each of the following conditions for coordination, compared with a situation where there is no such vertical integration:
 - (a) ability to agree and monitor terms of coordination;
 - (b) internal sustainability; and
 - (c) external sustainability.
2. In this appendix, we focus on vertical integration into RMX. However, our arguments apply in the same way to vertical integration into other downstream sectors which use cement (for example, manufacture of concrete products).

Ability to agree and monitor the terms of coordination

3. Compared with a situation where there is no vertical integration, vertically-integrated cement producers have more points of contact with each other by virtue of their RMX operations.¹ These include cross-sale of cement to one another's downstream RMX operations and interaction between their RMX divisions in the downstream market. These points of contact could facilitate greater information exchange and monitoring of the cement market. In particular, an RMX operation is likely to increase a cement producer's understanding of cement pricing, demand conditions and supply relationships.
4. In a situation with no vertical integration, a cement producer will gain knowledge of rivals' cement sales through knowledge of its own market share of cement, wins/losses of its cement customers, and through pricing pressure on remaining sales.
5. However, this knowledge of rivals' cement sales may be enhanced by vertical integration into RMX.
6. First, it may be difficult for a cement producer to detect cheating behaviour if such behaviour is limited to the cheater supplying more volume at lower price through a small number of customers already served by the cheater. The impact of this cheating would not be evident directly to other cement producers from cement customer wins/losses. Its impact would instead be felt through lower cement demand from other RMX suppliers who compete with the beneficiary of the cheater's low-priced/

¹ Hanson told us that this was not necessarily the case because its cement and RMX businesses were separate legal entities with separate management. Hanson also told us that ongoing vertical integration and moves to internalization and self-supply showed how the market had evolved towards a model of independence rather than interdependence. We consider the changes in amount of cross-sales over time in Appendix 7.13. We note that, though there has been a reduction in the amount of cross-sales over time, compared with a counterfactual of no vertical integration, the fact that cement producers are integrated into RMX increases the points of contacts between cement producers.

high-volume sale. However, such lower demand in a local RMX market from competitors to the customer of a cheater may be difficult to perceive since:

- (a) a cement producer will supply a large number of cement customers over a wide area which will cover many local RMX markets;
 - (b) there might be other reasons for fluctuations in demand from individual cement customers given the competitive nature of the RMX market and prevalence of short-term contracts; and
 - (c) lower demand from cement customers due to cheating may be difficult to distinguish from lower demand due to changes in market conditions.
7. However, ownership and operation of an RMX business may increase the transparency of cement volumes entering the supply chain in different local areas (including supply arrangements) as well as providing greater appreciation of underlying demand for RMX.
 8. Furthermore, in the event of a deviation, a cement producer may know when it has been undercut by a rival cement producer and lost a customer, but not the exact price which resulted in it being undercut. By also being active in the RMX market, a cement producer may gain further insight to the price at which the lost customer was supplied and the volumes supplied to it. This may be inferred through the intensity of competition within the RMX market in which the lost customer operates.
 9. Lafarge stated that RMX sales accounted for only around half of cement sales so RMX activity would give only limited information on the cement market. In addition, Lafarge said that aggregates represented a more important input into RMX than cement, making it harder to understand causes of price or volume changes observed at the RMX level. According to Lafarge, separately identifying cheating behaviour from changes in RMX competition would also be difficult given that RMX competition was inherently local and independent RMX operators could be strong local competitors.
 10. However, internal documents from the Majors show a relatively high level of transparency in the RMX market on a national and regional level, including information on wins and losses by different RMX suppliers.
 11. Therefore, simply having an RMX operation appears to improve the ability of cement producers to monitor the terms of coordination and any subsequent deviation at the cement level.

Internal sustainability of coordination

Incentive to deviate

12. In a situation where cement producers are not integrated, profits attained from deviating on coordination in the cement market would be derived from increasing sales of cement to independent RMX producers, independent concrete block producers and bagged cement buyers. With vertical integration, the rewards from deviating by offering a lower price to independent customers are lower because there are fewer independent customers that can switch.
13. To illustrate this, we give the following (highly stylized) example where there are two producers of cement, each producing 50 units of cement in the coordinated equilibrium. If there is no vertical integration, the gains to Producer 1 from deviating would

potentially be the ability to sell up to 50 units more by supplying all the independent RMX operators that are currently being supplied by Producer 2.

14. If there is full vertical integration, so that each cement supplier sells 50 units of cement through its own RMX operation, it would not be possible to deviate in that way: Producer 1 cannot offer a lower price to the vertically-integrated RMX operations of its rival Producer 2. The only way of deviating, with full vertical integration, would be to lower the 'internal price of cement' to Producer 1's own RMX operations in order to reduce the price of RMX charged by Producer 1's downstream operations and increase RMX sales (so as to lead indirectly to an increase in cement sales). However, such deviation is likely to be less effective and less immediate than deviating by increasing cement sales to independents. The effectiveness of such deviation will depend on:
 - (a) the importance of the costs of cement in the final price of RMX (ie the extent to which cement cost reductions result in lower RMX prices);
 - (b) the speed at which RMX customers would switch between RMX producers in response to a reduction in the price of RMX. Intuitively, there may be a delay in switching by RMX customers because RMX demand is mainly project based and therefore there may be a lead time to the next project; and
 - (c) the extent to which the integrated RMX producers of Producer 1 compete directly with RMX producers of Producer 2. If there is differentiation in the offerings (eg because of distance and travel time), a small change in relative price may not result in a large change in demand. For instance, even if Producer 1 lowered prices of RMX to very low levels, it is unlikely that it would be able to capture all additional 50 units of volumes in the example above because it is highly likely that there will be some areas of the country that it will not be able to serve. The highly localized nature of RMX markets is likely to reduce the effectiveness of deviating through reducing internal prices of cement.
15. Therefore, it is likely that deviating by increasing sales of cement through a cement producer's own RMX business would be less effective and less immediate than increasing sales of cement by reducing prices to independent customers who are currently supplied by competing suppliers. This reduces the incentives to deviate in this way.
16. The profits available from deviating may be lower if—as is currently the case—a significant proportion of RMX outlets are vertically integrated with other cement producers. Cheating may similarly be more easily detected if any such cheating is concentrated among a smaller number of independent cement customers who can more easily be monitored.
17. On the other hand, it should be noted that deviating by reducing internal prices may be more difficult to detect than deviating through reducing prices to independent customers. If a cement producer deviates by offering lower prices to an independent RMX producer, resulting in the independent RMX producer switching cement suppliers, this is likely to be easily detected by competitors who will be able to detect that one customer has switched cement providers. If a cement producer deviates by reducing internal prices in order to reduce RMX prices and increase RMX sales, this may be more difficult to observe, and therefore will require that cement producers monitor what is happening in the RMX market in terms of contracts and prices and any changes in RMX market shares by the Majors.

18. There may also be scope for cement suppliers to try to commit to high internal prices for cement. One such mechanism is cross-sales: rather than supplying their own RMX operations, cement producers could purchase cement from each other at relatively high prices as a commitment to high cement and RMX prices. There is some evidence from our analysis of the prices of cement cross-sales that the GB cement producers may have charged each other cement prices higher than market prices. This would have had the same effect as a firm charging its own downstream operation a high price, and could be used as a mechanism for cement suppliers to commit not to deviate through their own internal businesses. We also note the following Cemex email chain [✂].²

Ability to punish

19. The arguments set out above in relation to incentives to deviate would equally apply to ability to punish. All other things equal, it is likely to be more effective to punish via lowering prices to independent customers rather than to punish indirectly via lowering internal cement prices in order to increase cement sales through the vertically-integrated RMX outlets. So vertical integration may therefore have mixed effects on the internal sustainability of coordination as it reduces both incentives to deviate and ability to punish.
20. There is little academic work on the relationship between coordination and vertical integration. We are aware of one academic paper that analyses this relationship, and it concludes that vertical integration will facilitate coordination rather than hinder it. Nocke and White (2007)³ investigate the impact of vertical mergers on upstream firms' ability to collude when selling to downstream firms in a repeated game. The authors find that vertical mergers give rise to an outlets effect: the deviation profits of cheating unintegrated firms are reduced as these firms can no longer profitably sell to the downstream affiliates of their integrated rivals. Vertical mergers also result in an opposing punishment effect: integrated firms typically make more profit in the punishment phase than unintegrated upstream firms. The authors find that the net result of these effects in an unintegrated industry is to facilitate upstream collusion (at least with respect to initial vertical integration).
21. Hanson noted in its response to our provisional findings (paragraphs 6.5.21 and 10.9.3) that the quoted paper showed that the authors found that the impact of vertical integration on coordination could in many cases be ambiguous. However, even though the effects of vertical integration were not always clear-cut in this article, we found that it nonetheless provided some useful analysis in order to understand the possible effects of vertical integration on coordination, and in particular in terms of understanding the impact of vertical integration on profits from deviation and from punishment.
22. Lafarge Tarmac submitted in its response to our provisional findings that the cited academic article was not relevant to how vertical integration might support coordination in the GB cement market since it assumed that upstream firms were not capacity constrained.⁴ Lafarge Tarmac told us that the market-wide deviation or punishment assumed in the article was not possible in the GB cement industry as the available market net of internal sales made by Cemex, Hanson and Lafarge exceeded the spare capacity of each of Lafarge, Hanson and Cemex. Furthermore,

² See Section 9, footnote 52.

³ Nocke and White, 'Do Vertical Mergers Facilitate Upstream Collusion?', *American Economic Review*, Vol 97(4), September 2007.

⁴ [Lafarge Tarmac response to provisional findings](#), paragraphs 137 & 138.

Lafarge Tarmac argued that, in the case of supply of GB-produced cement, we considered deviation and punishment to be small scale as opposed to a market-wide effect, ie inconsistent with the cited article. We considered that, even if deviations might be smaller scale than those which are considered in the cited article, the incentives identified in the article still made sense in the context of the cement market, even with constrained capacities. This is because, with vertical integration, the amount of ‘contestable sales’ are lower, thereby reducing the incentives to deviate but also increasing the profits in a punishment phase.

23. [X] submitted that punishing deviation in the RMX market was not possible due to the transitory nature of RMX contracts themselves. According to [X], a producer would not be able to target a specific RMX producer’s customers and an attempt to do this might inadvertently punish another member of the colluding group. [X]⁵
24. With respect to repatriation as a punishment mechanism, [X] also stated that it has not had the ability to repatriate material volumes since [X]. Similarly Hanson observed that there was no evidence that Majors have reverted to cross sales after repatriating volumes.
25. Internal documents from the vertically-integrated firms provide a detailed account of how cross-sales provided cement producers with a credible punishment mechanism. This includes using internalization of cement purchases as a punishment mechanism. As set out in Appendix 7.13, internalization appears to have been driven in part by the economic downturn. However, this does not mean that remaining cross-sales do not act as a deterrent to cheating, nor that previous cross-sales did not do likewise.

External sustainability

26. An alternative to cement sold by the GB cement producers is imported cement (see Appendix 7.5 for our analysis of cement imports). However, via ownership of RMX operations, the cement producers may be able to restrict an important route to market for importers.
27. There is some evidence from importers that vertical integration in GB can limit the extent of imports. Titan told us that it considered vertical integration in GB as a barrier to entry and that if it were to expand further in GB it would need to acquire an RMX or aggregates business which would require considerable capital expenditure. [X]
28. Majors’ purchases of cement from importers are negligible, even though the Majors purchase cement from each other (including some small volumes from Aggregate Industries). There is some evidence from internal documents suggesting that Majors shun importers intentionally. A Tarmac email dated 12 March 2012 says: ‘[X]’.
29. As Table 1 below shows, around 52 per cent of bulk cement purchases in GB in 2011 were made by the Majors. This effectively limits the ‘addressable’ market available to importers or other potential entrants, making entry less attractive and coordination more sustainable.⁶ Furthermore, the ‘addressable’ market may be smaller in parts of GB where Majors have a high combined share in RMX and other concrete products. There may also be customers whose needs could not be served by the importers, for

⁵ See Appendix 8.2, paragraph 27.

⁶ Hanson argued that Aggregate Industries should not be excluded from the ‘addressable market’ for independent importers, as Aggregate Industries was an importer itself. We set out in paragraphs 8.257–8.264 the role of Aggregate Industries and explain why we think that Aggregate Industries does not have an incentive to increase imports into GB.

example if customers have a perceived concern about the security and/or quality of supply of imported cement.

TABLE 1 Proportion of bulk cement purchases in GB accounted for by Majors in 2011

	2008	2009	2010	2011
Total purchases of bulk cement by Majors	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total GB sales of bulk cement including imports*	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Proportion of bulk cement purchases by Majors	58%	55%	53%	52%

Source: Cemex, Hanson, Lafarge Group, Tarmac Group, Aggregate Industries, [REDACTED], [REDACTED] and [REDACTED]; cement importers; and CC analysis.

*Includes sales of bulk cement by the Majors, [REDACTED], and total sales by [REDACTED].

30. We found evidence in a Lafarge internal document, dated 2009, suggesting that vertical integration may be in part a tactical response to the threat of imports. The Lafarge document states that: [REDACTED].
31. This appears to refer to a cross-sale arrangement where the RMX operation of one Major supplied by another Major would be deterred from sourcing cement imports by the threat of punishment. This could further prevent an importer from gaining a foothold in the local market.

Estimating the customer detriment arising from the AECs in cement

Introduction and findings

1. This appendix sets out our approach to estimating the customer detriment due to the AECs in cement. We used two different approaches to quantify the customer detriment arising from high cement prices:
 - (a) profitability-based approach, and
 - (b) estimate of the customer detriment based on comparing average cement prices and a benchmark price that would prevail in a well-functioning market ('cost-based approach').
2. Our results are the following. Using the profitability-based approach, we estimate the annual customer detriment from high cement prices to be of the order of £30 million per year on average for the period 2007 to 2012. We think that this estimate underestimates the scale and significance of customer detriment in the future because the period that we have investigated includes a very severe and prolonged economic downturn and because our analysis did not cover a complete business cycle.
3. Using the cost-based approach, we find a total customer detriment of £92 million in 2011. This is comparable with an estimated detriment of £78 million in 2011 using the profitability-based approach (see Table 1). However, we noted that our cost-based estimate is based on a single year's data (2011) and that it is based on a model where, necessarily, we have had to make significant simplifying assumptions. On the other hand, we considered that 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 its limitations, we considered that the cost-based approach was a useful secondary point of reference in our estimation of the detriment arising from high cement prices.
4. For these reasons, we use the profitability-based estimate of the annual customer detriment as our baseline estimate for the annual customer detriment arising from the AEC, but we consider that this is likely to be an underestimate of the average annual detriment over a full business cycle.

Estimate of the customer detriment in cement using the profitability approach

5. In paragraphs 8.412 to 8.414 of the provisional findings, we provided one estimate of this customer detriment by reference to our analysis of the profitability of GB cement producers.¹ As set out in Appendix 7.7, we received extensive comments on the profitability analysis in our provisional findings. We also obtained an independent expert view on the approach we had applied to analysing cement profitability and commissioned a report about the cost of a new cement works from an independent cement consultancy. As a result of both the comments of the GB cement producers and the advice we ourselves commissioned we have adjusted our approach to analysing and positioning the profitability of the GB cement producers in some

¹ We subsequently corrected an error in this analysis; see the announcement published on our website on 01/08/13: www.competition-commission.org.uk/assets/competitioncommission/docs/2012/aggregates-cement-and-ready-mix-concrete/notice_cc_corrects_detriment_estimate.pdf.

important respects. We have also updated the analysis to include the 2012 information about the financial performance of the GB cement producers. The results of our updated analysis of the profitability of GB cement producers are presented in Appendix 7.7.

6. Having updated our profitability analysis, we updated our estimates of the customer detriment arising from high cement prices using the profitability approach. We set out in this section our calculations of the customer detriment based on the profitability approach.
7. Table 1 below is based on Appendix 7.7, Table 1. We have calculated the excess industry return as the industry return (after impact of impairment), as estimated in Appendix 7.7, Table 1, less a cost of capital of 10 per cent. This cost of capital represents the midpoint of our estimate of the GB cement producers' cost of capital, as set out in Appendix 4.2. Excess industry profit in each year is excess profitability in that year (after impact of impairment) multiplied by capital employed in that year (ie total net assets after impairments). Excess profit per tonne is excess profit divided by cement sales. This is our estimate of the overcharge in cement prices using this methodology.²

TABLE 1 Estimate of excess profits of the GB cement producers based on profitability

	2007	2008	2009	2010	2011	2012	Period averages		
							2007–2009	2010–2012	2007–2012
Capital employed after impairment (£m)	1,259	1,252	1,237	1,213	1,165	1,118	1,249	1,165	1,207
Profits after impairment (£m)	150	84	145	170	195	157	126	174	150
Profits / average capital employed (%)	11.9	6.7	11.7	14.0	16.7	14.0	10.1	14.9	12.4
Cement sales (Mt)	12.2	10.5	7.8	8.1	8.7	8.4	10.2	8.4	9.3
Excess industry return (%)	1.9	-3.3	1.7	4.0	6.7	4.0	0.1	4.9	2.4
Excess industry profit (£m)	24.0	-41.5	21.2	49.0	78.6	45.1	1.3	57.6	29.4
Excess profit per tonne (£)	2.0	-4.0	2.7	6.1	9.0	5.4	0.1	6.9	3.2

Source: CC, based on Appendix 7.7, Table 1.

8. The estimated excess profit per tonne varies considerably from year to year. We have calculated excess profit per tonne based on average capital employed across the period, average industry return across the period and average annual cement sales across the period. This results in an average excess profit per tonne of £3.20, or an average excess industry profit of £29.4 million per year for the period 2007 to 2012. When we split this period into two sub periods, one covering 2007 to 2009 and the other 2010 to 2012, we found that our estimate of annual excess profits over the earlier three-year period was minimal on average (0.1 per cent excess industry return), whilst over the more recent three-year period, average excess industry return was 4.9 per cent.
9. We therefore estimate the annual customer detriment from high cement prices to be around £30 million per year for the period 2007 to 2012, using the profitability approach. We note, however, that this is likely to 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

² This methodology uses our best estimate of economic profitability over the period. We note, however, as explained in paragraph 7.154, that this estimate of economic profitability would in this instance reflect lumpy unexpected costs such as impairment losses which would not be directly recoverable through prices over this period in a competitive market and therefore the detriment will be understated.

reduced demand) and, linked to this, (b) our analysis did not cover a complete business cycle.

Estimating the competitive price of cement from cost and demand data

10. In this section, we seek to estimate the customer detriment using another method, namely by comparing the average cement prices and the cement price that we would expect to observe under effective competition. We refer to this difference as the overcharge in cement. To do this, we aimed to establish a benchmark price that would prevail in a well-functioning market and compared that benchmark price with the actual price of cement. The difference between the benchmark price and the actual price allowed us to quantify some aspects of the customer detriment in cement.
11. To establish our benchmark price, we have derived a competitive supply curve of cement. The competitive supply curve is derived from producers' costs of supplying cement. In a well-functioning market, the interaction of competitive supply and demand would be expected to establish a market-clearing, competitive price of cement.
12. We find a benchmark price for 2011 of about £69.50 per tonne, around £10.50 less than the average price of a tonne of cement in 2011. Based on 8.78 million tonnes of cement sold in GB in 2011, an overcharge of £10.50 per tonne translates to a customer detriment of £92 million in 2011.

The approach

13. In this appendix our aim is to estimate the *overcharge* in cement, ie the difference between the average price of cement in GB cement markets and the price of cement under effective competition. We aimed to establish a benchmark price that would prevail in a well-functioning market, and compared that benchmark price with the actual price. The difference between the benchmark price and the actual price allowed us to quantify some aspects of the customer detriment in cement.
14. Coordination may have an impact on any dimension of competition, including price and output levels, the scope of firms' geographic operations, investment or innovation.³ The overcharge measures only the impact on price due to coordination and thus may not capture the full customer detriment due to coordination. It does not take into account losses from any output reduction associated with higher prices.⁴ Neither does it measure any longer-term or dynamic aspects of customer detriment, for example due to reduced investments in efficient production technology or reduced investments in research and development.
15. In our approach to estimating a benchmark price for cement we took existing cement works' capacities and costs as given. We used data on capacities and costs to derive a competitive short-run supply curve of cement. Between them, the supply curve and the demand for cement will pin down a market-clearing price of cement. Since the supply curve was derived based on the assumption of cement suppliers acting

³ The Guidelines, [paragraph 241](#).

⁴ When the price is higher than in a well-functioning market, the most price-sensitive customers refrain from buying cement. Some of these customers may have bought more cement at the competitive price. These forgone sales represent a customer detriment which is not captured by estimates of the overcharge. The customer detriment due to forgone sales could in principle be estimated if the elasticity of demand for cement in GB were known. Due to the absence of reliable estimates of the elasticity of demand for cement in GB we have chosen not to estimate customer detriment due to forgone sales. However, the demand for cement is likely to be relatively inelastic, which means the customer detriment due to forgone sales will be limited.

competitively, the market-clearing price gives a reasonable indication of what would constitute a competitive price of cement. The cement overcharge was the difference between the benchmark price and the actual price.

16. We used data on 2011 costs, capacities and demand to estimate a benchmark price and compared this with the 2011 weighted average price. Our reasons for using 2011 data were the following:
 - (a) it is the most recent year for which detailed data on prices, costs and capacities is available to us; and
 - (b) after several years of large changes in demand and supply conditions (2008 and 2009), demand and supply conditions stabilized in 2010 and 2011. Indeed, the demand for cement declined sharply between 2007 and 2009.⁵ This resulted in GB cement producers closing or mothballing cement production capacity in 2008 to 2010.⁶ In 2011, supply conditions appeared to be stable, and we also note that demand for cement stabilized in 2010 and 2011.
17. Hanson told us that restricting analysis to use of 2011 data would limit the analysis very significantly and unacceptably. It submitted that by using 2011 data, the analysis omitted the financial distress experienced by the GB cement producers and the competitive actions they took to remove capacity during the recession. It also told us that cement producers would be expected to try to recover some of these impairments through pricing during 2011. Our reasons for using 2011 data are set out above in paragraph 16. We note that this is one of two approaches to estimating the customer detriment, and that the profitability-based estimate of the customer detriment (as set out in paragraphs 5 to 9) takes into account the whole of the period 2007 to 2012 and would therefore take account of the years with lower demand and actions to remove capacity by the cement producers.
18. We begin by describing the assumptions we made to derive a competitive supply curve and the data upon which we based our estimate of the supply curve. We then describe how we constructed a demand curve and an equilibrium to arrive at a competitive price.

Deriving a competitive supply curve

19. In order to derive a competitive supply curve we made the following assumptions:
 - (a) one-shot outcome, ie no scope for repeated interaction to influence behaviour;
 - (b) firms are price takers;
 - (c) one plant's production decision does not take into consideration its effect on other plants (ie plants act as if they were all operated by distinct firms, each firm caring only about its own profit); and
 - (d) firms do not engage in price discrimination.
20. Assumptions (a) to (c) capture the competitive nature of the market we use to establish our benchmark competitive price. Assumption (d) simplifies our analysis. However, we would expect the scope for price discrimination to be limited in a

⁵ See Figure 2.3.

⁶ See Appendix 7.2, Table 11.

competitive market, as prices for all customers would tend towards the market-clearing level.

21. The first assumption was made to rule out repeated interaction. If repeated interaction were considered, there may be scope for coordination. Such outcomes would not be informative about the competitive price.
22. Assuming firms to be price takers allowed us to identify a competitive outcome.⁷ Given plants' fixed and variable costs, we determined whether or not a given plant would be active at a given price. Since we assumed that firms would not engage in price discrimination, there was only one price that had to be taken into consideration. This simplifying assumption enabled us to derive the amount of cement that would be supplied at a given price.
23. In addition to assumptions (a) to (d) above, we assumed for the purpose of exposition that there was no geographic differentiation between cement works. We maintain that assumption for the purpose of explaining the basics of this approach. We then relaxed this assumption to allow for a specific type of geographic differentiation. We describe the approach we took to dealing with geographic differentiation in the subsection titled 'Dealing with geographic differentiation' in paragraphs 42 to 48.
24. In this analysis, we assume that, absent coordination, cement producers would behave as price takers and would thus not be able to act strategically or exercise unilateral market power. In reality, GB cement producers may have a degree of unilateral market power even in the absence of coordinated behaviour. If this were the case, the price that would prevail absent coordination may be higher than the price we estimate here.⁸

Individual plants' supply decisions

25. The assumptions (a) to (d) above are in themselves not sufficient to derive a supply curve for cement. In addition, it was necessary to assess whether or not each individual plant would be active at a given price, and the volume that active plants would supply at that price. According to assumption (c) above, each plant decides independently whether or not to supply. We note that cement plants are capacity constrained, and took the view that they will supply when the price of cement exceeds an appropriate measure of the plant's costs. This subsection describes how we reasoned about individual plants' supply decisions. In particular, it sets out which costs we considered relevant in these decisions.
26. For this analysis, we relied to a large extent on the same data as the analysis in Appendix 6.5. We therefore adopted the same terminology with respect to costs as in Appendix 6.4:

⁷ We do this using a *tâtonnement* process. A tâtonnement process is a process for finding a competitive price. A hypothetical auctioneer announces a price. Each producer states the quantity they would be willing to supply at that price, and each buyer announces the quantity they would be willing to buy at that price. If there is an imbalance between supply and demand, the price is not market clearing and the auctioneer announces a revised price. The process stops when supply and demand balance.

⁸ The assumptions that plants operate independently and that there is no geographic differentiation could also diminish the degree of unilateral market power exhibited by market participants in the model. Since the assumption that firms are price takers already rules unilateral market power out, the assumptions of independence and lack of differentiation are unlikely to make a difference. Only if the assumption of price-taking behaviour were relaxed would the assumptions of independence and lack of differentiation matter in terms of the degree of market power displayed in the model.

- (a) Distribution costs are the distribution and haulage charges paid by customers for delivery of the goods from the seller's sites to the customers' job sites.⁹ Distribution costs do not include the costs of transporting goods or raw materials between a seller's sites. The costs of transporting goods or raw material between a seller's sites are included in the variable cost, as described below.
- (b) Variable costs are those costs that necessarily vary in line with small changes in production volumes (and to a lesser extent, sales volumes) during a normal production run at an active production site. A key assumption underpinning our definition of variable costs is that changes in production take place within existing production capacity limits, such that production could be increased without necessitating any further investment into plant or equipment. Our definition of variable costs thus excludes large step changes in cost associated with increasing capacity or bringing mothballed capacity back on stream.
- (c) Fixed costs are the converse of our definition of variable costs, ie costs that do not necessarily change in line with production or sales volumes. We subdivided fixed costs into the following subcategories:
- (i) site fixed costs;
 - (ii) divisional fixed costs;
 - (iii) central costs; and
 - (iv) depreciation and amortization.
27. A price-taking firm's decision about whether to produce at a plant or not depends on the plant's costs and the prevailing cement price. In deciding whether to produce or not, an operator of an existing plant will not take sunk costs into consideration since these costs have by definition already been incurred or will be incurred regardless of whether the plant is used for production or not. We considered any central or divisional fixed costs as being sunk for the purpose of this analysis. If variable costs and site fixed costs are covered at the prevailing price, there will be a positive contribution to central or divisional costs. Foregoing this contribution would not be rational. We also considered depreciation and cost of capital as being sunk for the purpose of this analysis, since these costs would be incurred regardless of whether the plant was used for production or not.
28. We defined a plant's operating costs to include the plant's site fixed cost, the plant's variable cost and the cost of distributing the plant's output (ie distribution cost). The operating cost thus excludes divisional and central fixed costs, depreciation and cost of capital. The operating cost excludes costs which are avoidable only in the long term and are therefore considered sunk. The operating costs are thus the relevant costs in deciding whether to use a plant or not in the short term.
29. A plant's unit operating cost is operating cost divided by output. Unit operating cost obviously depends on a plant's output. Unless otherwise stated, our convention has been to calculate unit operating cost based on a plant's maximum output, ie when operating at full capacity. We employ this convention because the unit operating cost

⁹ As far as possible, we have used charges paid by customers to cement producers as a proxy for the distribution cost. In the case of Hanson and Tarmac we used actual distribution costs, since these producers did not explicitly charge customers for haulage. We believe delivery charges are a reasonable measure of distribution costs since we do not believe haulage to be a profit centre. If cement producers are in fact making a positive margin on haulage, we would be over-estimating the distribution cost. This, in turn, would lead to an over-estimate of the competitive price and an under-estimate of the overcharge in cement.

calculated based on a plant's maximum output is the lowest price at which it could at all be rational to have the plant in operation.

30. If the market price of cement is too low to even cover a plant's operating costs (ie total site cost less depreciation and cost of capital, which are sunk), it will be rational to close or mothball the plant. If the market price is sufficiently high for a plant to cover its operating costs, it will be rational to operate the plant. This will be the case even if the price is not high enough to cover the plant's sunk costs, since those costs would not decrease even if the plant were to be mothballed.
31. For the purpose of deriving a supply curve, we thus assumed that each plant would be prepared to supply up to its capacity as long as the price was sufficiently high to cover the plant's operating cost.^{10,11}

Demand

32. For the purposes of this analysis, we took the demand for cement as given and equal to realized GB demand in 2011. This simplified the analysis somewhat and also reflected the fact that cement demand is likely to be relatively inelastic.¹² However, we recognized that this assumption could have implications for our conclusions: a more elastic demand curve will, in general, contribute to establishing a higher benchmark price. A higher benchmark price will in turn result in a lower estimate of customer detriment due to prices. On the other hand, a more elastic demand curve will mean that there is a larger customer detriment arising from higher prices due to lower volumes being sold as a result of these higher prices. Therefore, the effect of a more elastic demand on the overall estimate of customer detriment is not clear-cut: the direct price effect is likely to be less, but the effect due to lower volumes being sold will be higher.
33. We maintained the assumption of given demand in our analysis, and chose to discuss the implications of this assumption when assessing our results. Our analysis of how the conclusions change when demand is more responsive to changes in price is in [Annex D](#).
34. Once we had constructed a demand curve, we calculated the market-clearing prices. This is illustrated in Figure 1. The demand curve is shown as a vertical line in the figure, and the supply curve is pictured as a sequence of blocks denoted A–D. Each block corresponds to a production plant. The width of a block represents the corresponding plant's capacity and the height of a block represents the corresponding plant's unit operating cost. In the figure, it can be seen that the price would have to be above the unit operating cost of plant C in order for the market to clear. At any lower price, there would be too little cement to meet demand. It can also be seen that if the price were to exceed the unit operating cost of plant D, then plant D would have an incentive to produce and there would be excess supply.

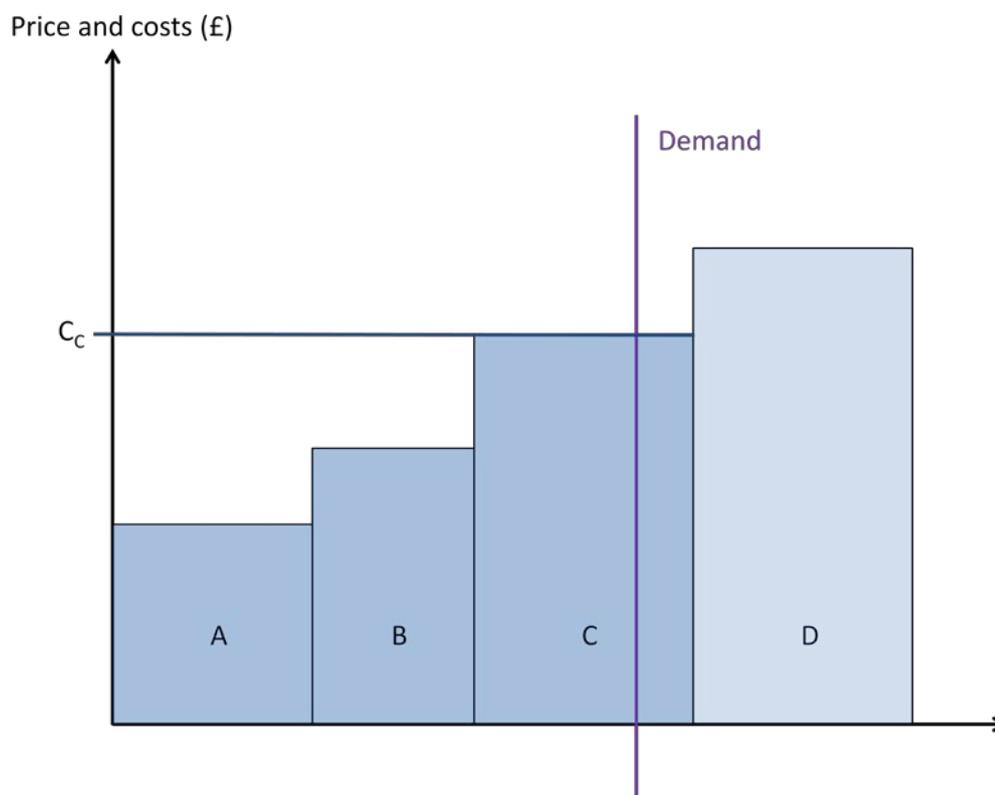
¹⁰ Note that this is not equivalent to a plant always being active when the price is above the plant's unit operating cost (as calculated based on the plant's maximum output). It could be that the plant is not in a position to sell more than a fraction of the quantity the plant could produce, in which case the plant would be able to cover its operating cost only if the price were above unit operating cost as calculated based on the plant's maximum output.

¹¹ For a plant to be able to commit to not selling at any price which covers operating cost, it would need some degree of unilateral market power. This assumption is thus not independent, but rather a consequence of the assumption that firms are price takers.

¹² Cement is an intermediate good; it serves as an input to various construction projects, has very few substitutes and the cost of cement represents only a relatively small proportion of the final price of such projects. Therefore, the demand for cement is unlikely to respond much to changes in prices of cement.

FIGURE 1

A supply curve, a demand curve and the marginal plant



Source: CC.

35. We refer to the least efficient plant that has to operate in order to fill demand as the marginal plant. In the figure, plant C is the marginal plant.
36. Since cement producers' production capacities are limited, prices can rise above the marginal plant's unit operating cost due to customers competing for limited quantities. On the face of it, such situations appear to be non-competitive in the sense that firms are selling at prices above marginal or average incremental cost. This would seem at odds with price competition—usually one would expect there to be an incentive to gain additional business by undercutting rivals' prices. However, this assumes that firms can expand output without incurring high incremental costs. If all plants are operating at full capacity, this is clearly not the case. Thus, no plant would have an incentive to expand its output and thereby depress the market price.
37. This shows that the marginal plant's unit operating cost is only a lower bound on the market-clearing price. If we identify the marginal plant for the GB cement market, we can use cost data for this plant to estimate a lower bound for the competitive price of cement.
38. The set of prices that can be supported by a competitive outcome in a given market configuration is bounded from above by the cost of bringing additional capacity online.¹³ In the figure, plant D represents idle capacity which would be brought online if the price were to rise sufficiently.

¹³ This is subject to the caveat in paragraph 31.

39. Additional capacity can be brought online in many ways: de-mothballing of a mothballed plant, expanding the capacity of an existing plant (eg de-bottlenecking), or building a new plant. In addition to this, imported cement or imported clinker ground in GB could also act as a form of entry. Imported cement is different from other types of entry as an importer's capacity does not come in discrete increments to the same extent as a domestic producer's capacity. Whether the upper bound is given by imports, de-mothballed capacity or new capacity depends on which the marginal plant is and which mothballed capacity exists.
40. Since capacity comes in 'lumps' and we assumed that demand is given, it will in general not be possible to have an exact match between demand and supply. If demand is such that the marginal plant can only sell a small fraction of its potential output, it would not be economically rational to keep the plant operational unless the cement price is above the plant's unit operating cost.¹⁴ If the marginal plant has to supply a volume close to its capacity in order to satisfy demand, we will use the marginal plant's unit operating cost as an indicator of the lower bound on the competitive price.
41. Cement imports may be used to fill any gaps between supply and demand if domestic supply is not well matched to domestic demand. Another alternative would be for GB suppliers to operate the marginal plant at or close to full capacity and export any excess cement. Given that GB producers' exports are very limited, the latter option seems less plausible. A third possibility is that all plants operate at slightly lower capacity and the price is slightly above the unit operating cost of the marginal plant.

Dealing with geographic differentiation

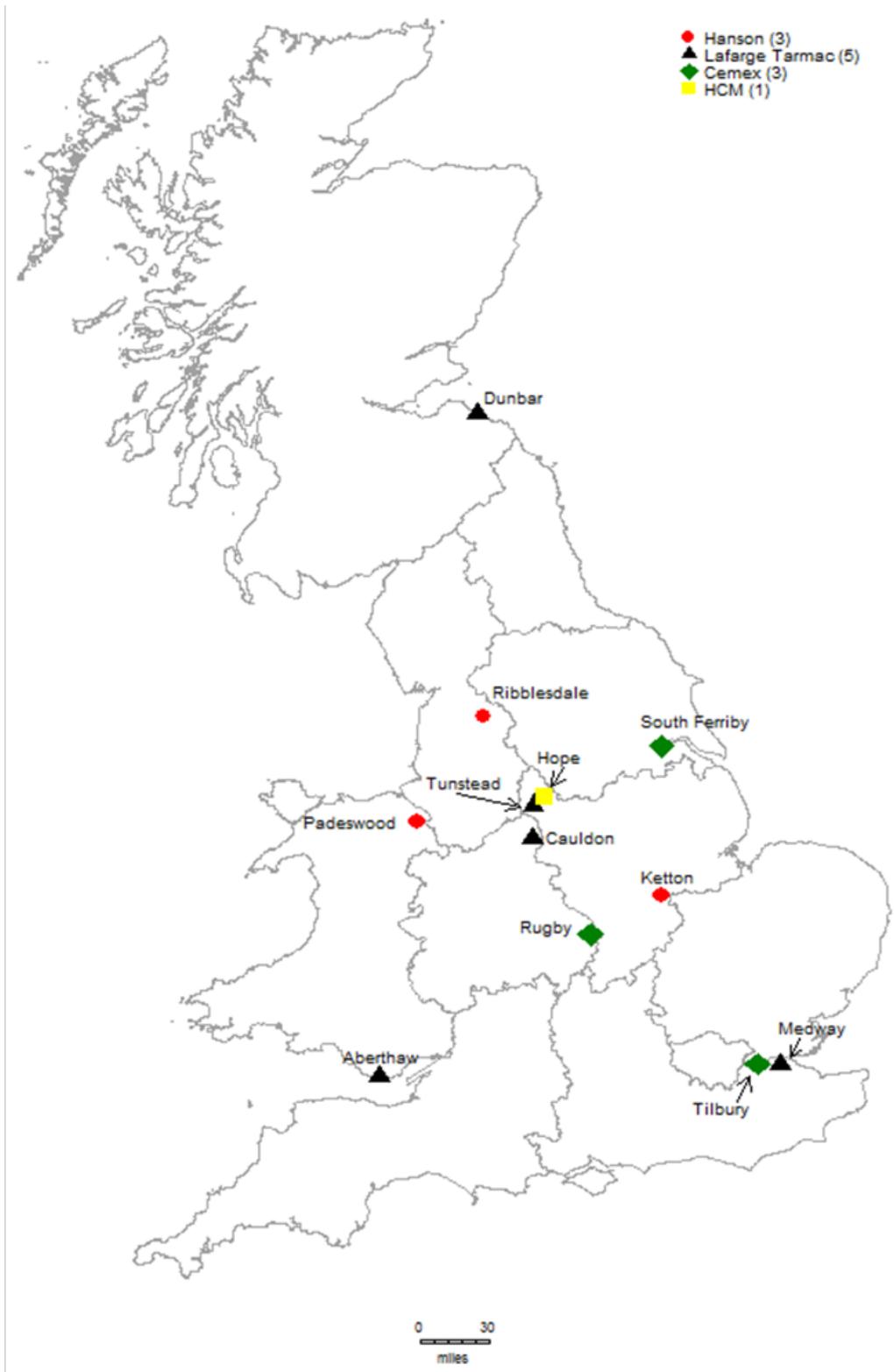
42. The cost of transporting cement represents a meaningful fraction of the price a customer pays for the product. We therefore considered how best to reflect differentiation between cement works in terms of geographic location and other aspects of logistical efficiency in identifying a benchmark price.
43. Figure 2 shows that most cement plants are located in a fairly small geographic area, with Lafarge's Dunbar and Aberthaw being exceptions. The latter are located in southern Scotland and southern Wales, respectively. We have captured this geographic differentiation by assuming that these plants will sell in their local areas (Scotland and Wales),¹⁵ and that any residual capacity at these plants can then be used to supply England. We have also estimated the cost of supplying cement into England from these plants.

¹⁴ There is also a more theoretical point related to existence of equilibrium. Unless we assume that plants get to serve customers according to efficiency, ie the most efficient plant gets to sell all its output before the second most efficient plant gets to sell etc, it would be the case that all plants that can economically supply at a given price will want to produce at capacity. This would lead to supply and demand not balancing. An assumption that plants get to serve customers in order of efficiency might be unrealistic outside a very structured, auction-like setting. In a structured setting such behaviour might arise in equilibrium.

¹⁵ Dunbar sold [X] per cent of its output in Scotland in 2011. Aberthaw sold [X] per cent of its output to Wales in 2011.

FIGURE 2

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



Source: Top 3 cement producers (FY11 transactions data).

Note: 'Medway' represents a site where Lafarge Tarmac has planning permission to construct a new 1.4 Mt cement plant. 'Tilbury' is a stand-alone grinding station, which is owned by Cemex.

44. The reason for focusing on the price of supplying cement to England is that England accounts for about 88 per cent of GB cement consumption. To assess customer detriment, we compare our estimated benchmark price to a volume-weighted average of the GB cement price.¹⁶
45. Effectively, we allocated some capacity at each cement works to Scotland and Wales. This mainly affected the Aberthaw, Ribblesdale, South Ferriby and Dunbar cement works. Capacity which had not been allocated to Scotland and Wales could be used to supply England. We called the capacity which has not been allocated *effective capacity*. GB cement works capacities and effective capacities are found in [Annex A](#).
46. Hanson told us that it considered our approach of calculating the effective capacity in England to be artificial and that it did not reflect market reality. Hanson submitted that it commonly engaged with customers on a national basis, that the stylized approach ignored the varying role that importers played in different regions of the country, and that the approach was inconsistent with the CC's view of a national geographic market for cement. Our reason for not including importers in this analysis was that we found that these operated at higher unit costs than the GB cement producers¹⁷ (and therefore, in the competitive equilibrium we derive, we would not expect imports because the competitive price of cement would not be sufficiently high for importing to be profitable). Our approach of modelling the demand for cement in England took into account the fact that the costs of transporting cement into England from plants located in Scotland and Wales may be relatively high, and was therefore done in order to take into account a degree of geographic differentiation between different cement plants. We do not think that this is inconsistent with a GB geographic market.
47. We were concerned that the distribution cost would not properly reflect the costs faced by the Dunbar and Aberthaw works when serving customers in areas outside Scotland and Wales, respectively. For this reason we imputed revised distribution costs to these plants. Costs and imputed distribution costs are found in [Annex B](#).
48. Figures relating to demand for cement and the residual demand (ie demand once certain quantities have been allocated to Scotland and Wales) are in [Annex C](#).

Results

49. Table 2 shows unit operating cost and effective capacity to supply England of all GB cement works. The cement works have been ranked in ascending order according to unit operating cost, which means that the most efficient plant appears at the top of the table and least efficient plant appears at the bottom of the table. The table also shows cumulative capacity. For a given cement works, the cumulative capacity is calculated by summing the effective capacities of all plants which are at least as efficient as the cement works in question. Comparing the table with Figure 1, the cumulative capacity on the row of a given plant corresponds to the total capacity of

¹⁶ Estimating the overcharge by subtracting the benchmark price for England from the GB-wide weighted average is an approximation. A more comprehensive approach would have been to estimate benchmark prices for England, Wales and Scotland, calculate the weighted average of these benchmark prices and then subtract the result from the actual GB-wide average. We have only estimated the price that would prevail in England in a well-functioning market. If the benchmark prices for Scotland and Wales were equal to the benchmark price for England, subtracting the benchmark price for England from the actual GB-wide weighted average does not introduce an error into the overcharge estimate. We note that the gain in precision from following the more comprehensive approach is limited. By way of example, if the benchmark price for England were £70 per tonne and the benchmark prices for Scotland and Wales were £77 per tonne, the error introduced by our approximation is less than £1 per tonne. This is due to the large weight given to England in the weighted average.

¹⁷ See Appendix 7.5.

the plant and of all plants to the left of the plant. [Annex B](#) sets out how we arrived at unit operating costs and [Annex A](#) sets out how we arrived at effective capacities.

TABLE 2 Unit operating costs and effective capacities to supply England of GB cement works

Plant	Unit operating cost	Effective capacity	tonnes/year
			Cumulative effective capacity
[X]	[X]	[X]	[X]

Source: GB cement producers' profit and loss data, GB cement producers' replies to market questionnaire, CC calculations.

50. We have defined the marginal plant as the least efficient plant that has to be active to fill demand. The marginal plant is thus found by comparing residual demand with cumulative effective capacity. We have used a residual demand of 7.7 million tonnes, see [Annex C](#). It follows from Table 2 that [Plant 1] is the marginal plant. [Plant 2] and all plants more efficient than [Plant 2] have an effective capacity of less than 7.7 million tonnes per year. This means that these plants do not have sufficient effective capacity to fill residual demand and that the market-clearing price must be above £63 per tonne. [Plant 1] and all plants more efficient than [Plant 1] have a cumulative effective capacity of just over 7.7 million tonnes per year, which is just sufficient to fill the residual demand of 7.7 million tonnes per year. This implies that the market-clearing price must be at least £66.60 per tonne. If the price were to rise above £69.50 per tonne, [Plant 3] would have an incentive to produce cement. This would create a situation where there is more supply than there is demand. A price above £69.50 per tonne would thus not be market clearing. It follows that the market-clearing price is in the range of £66.60 to £69.50 per tonne, since the plants that will be supplying cement when the price is in this range have sufficient capacity to fill demand.
51. The conclusions of our analysis could potentially change if the [X] kiln at [Plant 4], [X]. We therefore considered it likely that cement prices would have to increase significantly to make it rational for [X] to [X] kiln [X].
52. We noted in [Annex A](#) that [Plant 5's] variable cost of serving areas outside [X] may in fact be higher than indicated by Table 2. As [Plant 5's] unit operating cost is considerably below those of [Plant 1] and [Plant 3], [Plant 5's] variable cost could rise considerably before the outcome of our model is affected.
53. We noted above that our assumption of given demand could affect our conclusions. [Annex D](#) of this appendix deals with this issue. The analysis in Annex D shows that a scenario where [Plant 3] is active and the benchmark price is close to £69.50 per tonne is consistent with a reasonable degree of elasticity of demand. In a scenario where [Plant 1] is the marginal plant, demand for cement would have to be very inelastic for supply and demand to balance. We therefore considered this scenario less plausible.
54. GB producers' average price of cement in GB was approximately £80 per tonne in 2011.¹⁸ A benchmark price of £69.50 per tonne suggests that the overcharge was around £10.50 per tonne in 2011. Based on 8.78 million tonnes of cement sold in GB

¹⁸ Volume-weighted average of GB cement producers' price of bulk cement sold to independent buyers in 2011, as found in Appendix 7.8, Table 1.

in 2011, this translates to a customer detriment due to elevated prices of £92 million in 2011.¹⁹

55. We also note that that price of £69.50 per tonne represents the lowest price at which [Plant 3] would be operating. The plant would be prepared to supply at any price above £69.50 per tonne. If demand is sufficiently elastic, the competitive price would be above £69.50 per tonne. As we believe the demand for cement to be inelastic, we do not believe that the competitive price is materially above £69.50 per tonne.

The role of EU ETS

56. Trading of carbon allowances could change producers' incentives to supply cement. If the ability to trade allowances gives some plants an incentive to reduce output in order to sell excess allowances on the open market, this could affect the price that would prevail in a well-functioning market. Thus increasing or maintaining output gives rise to a cost ('cost of carbon'), either because additional carbon allowances have to be bought or because the number of surplus allowances that could be sold or used in the following year is reduced.
57. Since we are comparing the 2011 outcome to a 2011 benchmark, we consider EU ETS Phase II as the relevant framework for assessing the incentives introduced by emissions trading.²⁰ There was no partial cessation rule in EU ETS Phase II, and therefore we do not consider it likely that any plant could have an incentive to expand production due to emissions trading incentives. For this reason, we have restricted our attention to incentives to reduce output arising from emissions trading.
58. Under EU ETS Phase II, the closing of a plant would mean that the plant's allocation of allowances would usually be forfeited.²¹ For this reason, we rule out the option of closing a plant (and thereby avoiding the entire operating cost) and selling all the plant's allowances. In order to be able to sell allowances, a plant would thus have to incur site fixed cost.
59. A cement works is thus faced with a trade-off between producing cement and selling allowances, and considers site fixed cost as unavoidable when making this choice. Using the variable and distribution costs in [Annex B](#), Table 1 and the revised distribution costs for Aberthaw and Dunbar, the margin between the cement price and variable and distribution costs is above £14.50 per tonne for all cement works at a cement price of £69.50 per tonne. The 2011 average price of allowances was about €14 per tonne of CO₂,²² or about £13.50 at the 2011 exchange rate. This suggests that, given the competitive price of cement of £69.50 per tonne, it would always be more profitable for GB cement producers to produce cement than to sell allowances. The competitive price of cement would need to fall to about £68.50 per tonne in order for this not to be the case, and even if the price were to fall below this point the resulting output reduction would be very limited.²³ This bound is conservative, since one tonne of cement corresponds to less than one tonne of CO₂. The market price of cement could therefore drop further before incentives to sell allowances rather than cement arise. We therefore do not believe that EU ETS affects our estimate of the competitive price of cement.

¹⁹ We assume here that the £69.50 benchmark price would also apply to Scotland and Wales.

²⁰ Please refer to Appendix 2.2, for a description of the EU ETS emissions trading framework.

²¹ Cases where the operator of a plant closed an inefficient plant were an exception. In such cases, the operator could transfer the closed plant's allowances to a more efficient plant.

²² Appendix 2.2, Figure 4.

²³ [X]

60. Lafarge Tarmac told us that the CC analysis did not recognize that the cost of CO₂ was an important opportunity cost which Lafarge Tarmac considered in its business decisions, because producing and selling a unit of cement meant foregoing a sale of a carbon allowance. Lafarge Tarmac submitted that in doing so, the CC underestimated the competitive benchmark price.
61. Hanson made a similar observation, and reiterated the point in its response to our provisional decision on remedies.²⁴ Hanson submitted that the cost of carbon was a relevant opportunity cost for plants when determining the level of production, and that it was possible for a firm not to operate at full capacity, choosing to sell the unused carbon allowances. Hanson told us that the higher the cost of carbon, the less production there would be. Hanson also told us that the EU ETS Phase III fundamentally changed the way the market worked so that the CC's model had no applicability going forward.
62. Our analysis takes into account the fact that the cost of carbon is a cost to cement producers by comparing the revenues from producing and selling cement (and incurring the costs of producing cement) with the revenues from not producing cement and selling carbon allowances instead (see paragraphs 58 and 59 above). We do not think it is appropriate to include this cost as an opportunity cost because, once a cement plant is active and has incurred the fixed costs of producing cement, the relevant trade-off is between, on the one hand, producing cement and, on the other hand, selling the corresponding number of allowances. Since we assume price-taking behaviour and a constant variable and distribution cost, the producer faces a choice between either producing cement up to capacity or selling all its allowances.

Summary of parties' comments on the methodology

63. We received a number of comments from Cemex, Hanson and Lafarge Tarmac on the cost-based approach to estimating the overcharge in cement prices. In this section, we present the parties' comments on our methodology and our assessment of these comments.

Inconsistency between the profitability-based approach and the cost-and-demand-based approach

64. Lafarge Tarmac told us that the customer detriment estimates derived using the cost and demand data were inconsistent with our profitability analysis. It told us that the customer detriment calculated using the cost and demand data was almost as much in a single year as the total customer detriment calculated using the profitability analysis for a five-year period. It also told us that there was an inconsistency between the CC's competitive price analysis and the CC's profitability analysis, because the CC's profitability analysis assumed that newer plants were more efficient whereas in the CC competitive price analysis, Hope and Cauldon, both of which were substantially older than Tunstead, were both assumed to be [X] cost plants than Tunstead.
65. Cemex told us that the benchmark we used in this approach was inconsistent with the approach used by the CC to estimate whether prices were excessive using the profitability approach, which recognized that firms needed to cover their total economic costs including earning a return on capital employed.

²⁴ [Hanson response to provisional decision on remedies](#), paragraphs 2.30–2.38.

66. Hanson told us that the model of competition we used was inconsistent with our approach to calculating profitability in that it did not allow some firms to recover their total economic costs, including depreciation and a return on capital.
67. The profitability approach and the cost-based approach to estimating the customer detriment are different methodologies and we would therefore not expect the estimates to be the same. As we set out in paragraph 8.414, we consider that the estimate of customer detriment based on the profitability approach underestimates the harm to customers that would be avoided by the introduction of effective measures to remedy the Coordination AEC, because the period that we have investigated includes a very severe and prolonged economic downturn. In contrast, the methodology based on the cost approach is less heavily affected by the economic cycle.

The benchmark chosen for the estimation of a competitive price is not appropriate

68. Lafarge Tarmac told us that the competitive price used in the CC analysis was the wrong benchmark. It told us that the AEC finding was based on coordination, and that the relevant counterfactual was one that would arise in a non-coordinated market (rather than a perfectly competitive market). It told us that effective competition in a non-coordinated market (eg characterized by Cournot competition) was entirely consistent with prices set above the marginal cost of the marginal plant, as a result of which the CC's benchmark price was too low.
69. Cemex told us that the CC analysis relied on a model of short-run competition, which assumed that it was rational for cement producers to supply at any price that exceeded their short-run operating costs. Cemex submitted that it was wrong to infer that any price above these unit operating costs was excessive, because if firms priced at this level in the long run, they would not be able to fund the annual capital maintenance and replacement of their assets. Cemex also told us that the GB cement market had a limited number of plants, with fixed capacities which could not easily be varied in the short run. Given these characteristics, it submitted that economic theory would predict that the competitive outcome could well lead to prices that were higher than costs. In particular, prices could be higher than either the costs of the marginal plant or the costs of the next most expensive plant.
70. Cemex told us that the benchmark we had used was inconsistent with the approach most competition authorities used to assess whether pricing may be exclusionary. It told us that it was commonly recognized that prices that were below long-run average incremental costs could be exclusionary. Cemex submitted that the approach used by the CC would find that prices at (or even below) the long-run average incremental costs would be excessive.
71. Hanson, too, made similar comments. It submitted that our model was highly theoretical and stylized, near to a world of perfect competition, and it raised concerns about whether the CC model should be the appropriate benchmark. In this respect, it quoted the CC Guidelines 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.'²⁵ Hanson noted in its response to our provisional decision on remedies that the CC had not explained why the model we developed was the 'best estimate' of a well-functioning cement market and why other standard oligopoly models had been rejected.²⁶ Hanson told us that our model

²⁵ [Hanson response to provisional decision on remedies](#), Annex I, paragraph 2.17.

²⁶ *ibid*, Annex I, paragraphs 2.17 & 2.18.

described a setting that was not sustainable or achievable in the long run. It told us that because our model did not allow firms to recover the costs of replacing depreciated assets or to make a return on capital, the model was not a long-run equilibrium model. It submitted that by excluding those costs, firms would exit the market in the long run and no firms would enter. It told us that the price estimated by the model understated the cost of supply and so overestimated the alleged customer detriment.

72. We agree that the benchmark we used for competition in this approach is not the only possible benchmark, and noted in paragraph 24 above that GB cement producers may have a degree of unilateral market power even in the absence of coordinated behaviour. If this were the case, the price that would prevail absent coordination may be higher than the price we estimate here. Therefore, in this respect, the competitive price that we estimate with the cost-based approach can be interpreted as a lower bound for the price that would prevail had we allowed for oligopolistic competition and kept other features of the model unchanged. In this respect, Hanson commented that we had not provided an explanation on the scale of the overestimate.²⁷
73. With respect to Hanson's comments concerning firms making a return on capital, we note that in the benchmark we use, some firms (those with plants which are more efficient than the 'marginal plant') would earn a return on capital. However, we acknowledge that, because the benchmark we use is based on a relatively short-term model of competition, some of the less efficient plants may not be able to recover costs of capital in equilibrium. We note that our approach of calculating the customer detriment based on the profitability approach allows firms to make a return on capital.
74. With respect to Cemex's submission that the approach is not consistent with the approach used by other competition authorities to assess whether pricing is exclusionary, we note that our aim is to estimate the amount by which prices of cement may be above a competitive benchmark because of the AEC we identified. This does not have any read over to exclusionary pricing cases, where the question would usually be whether a firm in a dominant position is setting downstream prices so as to foreclose competitors.

The assumptions in the model do not reflect the reality of the GB cement industry

75. Lafarge Tarmac told us that the CC analysis did not capture the reality of the GB cement industry. In particular, it told us that the CC analysis:
 - (a) incorrectly predicted that a non-coordinated industry would have closed down cement plants that were less efficient than the marginal plant in 2011. Lafarge Tarmac submitted that given that cement demand was cyclical and the closing/mothballing of plants was costly, a non-coordinated cement industry would not have closed down cement plants in 2011 since demand was expected to recover in the future;
 - (b) incorrectly assumed that cement producers were myopic and did not take account of rational, forward-looking behaviour by cement firms in 2011 in relation to EU ETS Phase III (ie the effect of plant closure on carbon allowances);
 - (c) did not take into account the difference between internal and external sales, and the fact that cement producers would often choose to supply their downstream

²⁷ *ibid*, paragraph 1.4(iii).

business even when transport costs were large and there was a competitor cement plant located closer to their downstream business;

(d) incorrectly assumed that there was no geographic differentiation: Lafarge Tarmac submitted in this respect that distribution costs would be influenced by, among other factors, the costs of supplying internal downstream customers; and that the fact that a plant distributed cement further away would, other things being equal, result in the CC's methodology categorizing this plant as a higher-cost plant; and

(e) incorrectly assumed a homogeneous commodity product market when in reality there was significant variation in product.

76. With respect to (a) above, our estimate of the benchmark competitive price is based on estimating the price at which supply is sufficient to satisfy demand. We do not agree with Lafarge Tarmac's interpretation that the analysis predicts closure of the less efficient plants in 2011—rather, it predicts that, with competition, cement prices would settle at a level for which supply is sufficient to satisfy demand. In the model, this would mean that one plant ([Plant 3]) is not utilized in equilibrium.
77. With respect to the role of carbon allowances in the future and the effect of closure on future carbon allowances, we note that we took into account the role of carbon allowances in immediate production decisions, but we did not take into account the fact that cement producers may decide to produce more today in order to maintain carbon allowances in the future. We note that, if this were the case, this is likely to mean that supply of cement would be greater, at given costs, than implied in our model (because not producing cement would in effect be costly in the future), and therefore may result in a lower benchmark competitive price, as certain plants may be willing to produce cement even if the price of cement is low.
78. With respect to (c), (d) and (e), we made certain simplifying assumptions in the analysis. However, we do not think these assumptions are likely to materially impact our results. In particular, we looked at the ranking of plants depending on costs when transportation costs are excluded, and found that this ranking was very similar to the ranking where we include transportation costs. It does not therefore appear that firms which distribute cement further away are categorized as higher-cost plants. Whilst we agree that there is a degree of differentiation in cement products, there is a large degree of substitutability at the supply level, and therefore this is unlikely to affect our results.
79. Cemex told us that the analysis implicitly assumed that any uplift in the price of cement would be fully passed through by intermediate customers (eg RMX producers) to consumers. Cemex submitted that it was more likely that part or even all of any such uplift would be absorbed by RMX producers and none or only part would be passed on to consumers. Cemex submitted that this was true even in highly competitive markets such as RMX, and that it was therefore possible that by implicitly assuming 100 per cent pass-through, the CC analysis overestimated the resulting customer detriment. Cemex made a similar point in its response to the CC's provisional decision on remedies, commenting, in the context of the profitability-based approach to estimating customer detriment, that the CC was unjustified in assuming that excess profitability equated to consumer detriment.²⁸ Our aim was to estimate the customer detriment arising from high cement prices (which will include customers purchasing cement to make RMX), rather than to estimate the customer detriment to downstream consumers from high cement prices. Even then, we do not

²⁸ [Cemex response to provisional decision on remedies](#), paragraphs 2.9–2.12.

accept Cemex's argument: given that RMX is a competitive market, we would expect high prices of cement to be passed through by RMX producers to their customers.

80. Hanson told us that our model relied on highly stylized assumptions which were far removed from the reality of the cement market. In particular, Hanson pointed out that our model:
- (a) assumed perfect transparency of demand and of prices which in reality was not evident in the market;
 - (b) made the unrealistic assumption that all plants acted as if they were operated by a distinct firm, thereby ignoring the benefits associated with the synergies that came from operating a portfolio of plants;
 - (c) ignored all relevant and essential central head office costs that the plants would have to incur, and which would be part of site fixed costs, if each plant were to operate on a stand-alone basis;
 - (d) ignored the fact that cement could be stored, so that demand might be met from excess production from infra-marginal plants in previous periods rather than the marginal plant which was likely to affect the benchmark price;
 - (e) incorrectly assumed that a plant could be brought on and off line in a frictionless and cost-free fashion. Hanson pointed out that it was very costly to restart a mothballed kiln and that there were significant costs in decommissioning a plant too. Hanson also told us that the model did not consider the time required to turn plants back on; and
 - (f) ignored any facilities that did not produce clinker such as grinding facilities and import terminals, despite these being a key feature of the industry.
81. Hanson told us that the above set of assumptions would, in general, tend to maximize the alleged overcharge.
82. Hanson is right to remark that the model assumes transparency of prices and of effective demand, point (a) above. This is a simplifying assumption. It is made so that the model is not made unduly sophisticated by having to specify a more complicated mechanism of how information flows in the market. We consider that it is also a reasonable assumption to make in the light of the static nature of the model—capacities and effective demand are assumed to remain unchanged. Given this, had we not assumed transparency in the first instance and had we specified how plants collect and update information about demand levels and prices, then we expect that plants would learn what the market-clearing prices would be and would decide on production levels accordingly; the outcome of that process would be the same as the outcome when we assume from the start that there is transparency of prices and of effective demand.
83. With respect to point (b), the model's assumption is that the decision to produce or not at a given plant is made without taking into consideration its effect on other plants, namely on other plants that are in fact run by the same producer. This assumption does not negate the synergies that exist from running a network of plants in the sense that, to the extent that such synergies exist and have an impact on the operating costs of the different plants, these will be reflected in our calculated unit operating cost of each plant.

84. The point Hanson raises at (c) relates to the model's assumption that plants behave as if they stand alone. However, that assumption is that firms make a decision on whether or not a particular plant should be active and, once active, on the amount of cement to produce, without considering how this impacts on other plants, including on other plants belonging to the same firm; it is an assumption about behaviour. It is not an assumption that each plant must in fact be a stand-alone operation, having to incur the relevant additional central head office costs.
85. The model we constructed is a static one, in the sense that there is no temporal dimension to it, and, as such, it does not consider fluctuations in demand from one period to another. This is a simplifying assumption, made to allow for an analytically tractable model that allows us to study the key features of interest. In this light, the model does not deal with considerations such as the ability to store cement from one period to another or with the costs of mothballing and of reactivating a plant, points (d) and (e) above. However, our understanding is that the time period over which cement can be stored is relatively limited, and therefore taking into account ability to store cement (beyond storage to smooth production over the year, which is taken into account in our model) is unlikely to change the results. We note that clinker can be stored for longer than cement, though only for a finite period.
86. With respect to the costs of mothballing and de-mothballing plants, our analysis of GB cement capacity is based on current active capacity, ie mothballed capacity was not included in the total capacities. We find that current active capacity is larger than GB demand, and therefore that there is no need to incur costs of de-mothballing plants in our analysis.²⁹ Moreover, we do not agree with Hanson's argument that not incorporating the costs of mothballing in the model would increase the estimated overcharge. Had we taken account of the costs of mothballing and of reactivating plants, then we would expect active plants to be less likely to choose temporarily to close down when in a period of relatively low demand, and this could tend to make the benchmark price lower than in our model, in which the possibility of mothballing was not considered.
87. With respect to point (f), we discussed earlier (paragraph 46) our reason for not including importers in this analysis; we found that importers operated at higher unit costs than the GB cement producers, and therefore, in the competitive equilibrium we derive, we would not expect them to be active as the market price of cement would not be sufficiently high for importing to be profitable.

Arguments that the findings of the model are not robust to very small changes in assumptions

88. Lafarge Tarmac submitted in its response to our provisional decision on remedies that the benchmark price estimated by the model was very sensitive to the assumptions about the level of effective capacity to serve England, and/or the assumption about the proportion of CEM I in blended and bagged cement.³⁰ Lafarge Tarmac noted that if the GB capacity measure were reduced by just 1 per cent, then the model would predict that [Plant 1]—and all other plants more efficient than [Plant 1]—would produce to full capacity and that [Plant 3] would become the marginal plant, running at a low utilization rate. Lafarge Tarmac argued that for [Plant 3] to break even at such a low utilization rate, it would need to charge a price substantially above

²⁹ If, however, GB demand for cement were substantially higher than current demand, and de-mothballing existing capacity were necessary in order to satisfy GB demand, we agree that costs of de-mothballing would become relevant and this could result in a higher estimate of the benchmark competitive price.

³⁰ Appendix to [Lafarge Tarmac response to provisional decision on remedies](#), report by RBB Economics 'Consumer detriment and profitability: a response to the Provisional Decision on Remedies', pp6&7.

£[redacted] per tonne, indeed above £[redacted] per tonne. Lafarge Tarmac submitted that varying effective capacity by just four percentage points gave rise to a competitive price, as estimated by the model, in the range of £[redacted] to well over £[redacted] per tonne.

89. Hanson also commented on the sensitivity of the findings of the model.³¹ It noted that had market demand been just 0.1 per cent higher than we actually observed, or had the nine active plants been run at less than maximum capacity, then [Plant 3] would have become active. Hanson submitted that, in that setting, the benchmark price would have risen to the level at which importers would enter the market. Hanson submitted that such a scenario would have arisen if (a) there was a measurement error in observed market demand of less than 0.5 per cent; or (b) if there was any uncertainty on market demand during the year; Hanson noted that the point estimate of 2011 demand we used benefited from perfect hindsight and that, had there been uncertainty that the out-turn could have been higher in the year, then a higher market price would have resulted; or (c) if any of the nine active plants had not run at maximum capacity; or (d) if the market price was not perfectly observable.
90. We acknowledge that the model finds that the demand in England would be met by all nine active plants producing at or very close to full capacity, and that a small variation in estimates of either demand or effective capacity would trigger the tenth plant, [Plant 3] to become the marginal plant. We examined in paragraphs 40 and 41 above the implications of the model in the event that the marginal plant would only be selling a fraction of its potential output. We acknowledged there the point made by Lafarge Tarmac, namely that the cement price could be above the marginal plant's unit operating cost (as calculated when the marginal plant is running at full capacity). We also considered the possibility that imports may fill any gap between supply and demand if domestic demand is not well matched to domestic supply (see paragraph 41). In that setting, domestic prices would be constrained by, and set with reference to, importers' price. This is the point raised by Hanson.
91. An alternative arrangement we also considered in paragraph 41 would be for all ten plants to operate at slightly below full capacity, rather than for the nine most efficient ones to operate at full capacity and the tenth one, the marginal one, to operate at a low utilization rate.³² In this case, and in the context of the sensitivity analysis carried out by Lafarge Tarmac and Hanson, the benchmark price predicted by the model would be slightly above the unit operating cost of the tenth plant, [Plant 3]. Taking one of the sensitivities considered by Lafarge Tarmac as an example—the effective capacity being 1 per cent lower than has been assumed—then, market demand could be met if all plants operated at around 97.5 per cent capacity. In this case, the unit operating cost at [Plant 3] would be around £70.10, and this would set the benchmark price in the market.

Arguments that the model is internally inconsistent

92. In its response to our provisional decision on remedies, Lafarge Tarmac submitted that the model contained a demonstrable error in relation to the assumption made concerning the [Plant 3] plant.³³ In brief, Lafarge Tarmac noted that the model assumed that [Plant 3] supplied Scotland, though it would not supply England. For [Plant 3] to break even on the basis of supplying Scotland alone, it needed to charge a price above £[redacted] in Scotland. This, however, would not be sustainable whilst other

³¹ [Hanson response to provisional decision on remedies](#), paragraph 2.7.

³² The model assumed that each plant was operated by a distinct firm. In practice, we would expect cement producers to manage production across their portfolio of plants which, in the situation where one of their plants would otherwise be operating at low utilization, might lead to production being spread across their network of plants.

³³ Appendix to [Lafarge Tarmac response to provisional decision on remedies](#), report by RBB Economics, op cit, pp 4 & 5.

plants supplied England at £[redacted]. As such, Lafarge Tarmac concluded that the market clearing price would have to rise to the price set by [Plant 3] (ie over £[redacted]) in order to induce sufficient supply to meet demand, if [Plant 3] were to meet supply requirements in Scotland.

93. We do not consider that Lafarge Tarmac's comment points to a demonstrable error in the model. The model analysed seeks to be one of the English cement market where the impact of Scotland is taken into account only for the purpose of calculating the residual capacity that each plant has to supply England. By construction, the model did not seek to model prices in Scotland and so does not take account of the effects these might have on prices in England. In short, the model was constructed to effectively keep England and Scotland separate, as far as price effects are concerned.
94. Lafarge Tarmac's comment denies the model one of the assumptions on which it rests. The comment then is a criticism of a model assumption, rather than a criticism of an internal inconsistency in the model or a criticism that the model's finding does not follow from the assumptions of the model. We made the assumption in the model separating England and Scotland for the purpose of dealing, in a simple way, with the differentiation between the geographic location of cement works, given that transportation costs represent a meaningful fraction of overall unit costs.

Conclusions on the cost-based estimate of the customer detriment

95. Based on the above, we find that [Plant 3] is likely to be the plant whose costs constrain the price of cement in our model, and the benchmark price derived from our model is about £69.50 per tonne. This corresponds to a 2011 overcharge of around £10.50 per tonne. Based on 8.78 million tonnes of cement sold in GB in 2011, an overcharge of £10.50 per tonne translates to a customer detriment of £92 million in 2011.
96. However, we think that this estimate is likely to represent an overestimate of the customer detriment, because the model we use to derive this estimate is a relatively short-term model of competition which considers costs of capital as sunk, and because the model we use does not take into account the possibility of oligopoly competition.

Capacities and effective capacities

1. In this annex we describe the measures of capacity we have relied on in estimating the competitive price of cement. We also describe the effective capacities we calculated to capture geographic differentiation between cement works. The effective capacity measures a cement works' capacity to supply England.

Capacity of GB cement works

2. Cement is ground clinker. This means there are two capacity constraints that matter in the production of cement: kiln capacity and grinding capacity. When ground, 1 tonne of clinker will produce approximately 1.1 tonnes of CEM I. We have used the lesser of 1.1 times a cement works' clinker capacity and its grinding capacity in our analysis.
3. We use figures from Appendix 7.2 for GB cement works' clinker capacity. These figures take kilns' planned and unplanned downtime into account and are thus below kilns' nameplate capacities. Lafarge Tarmac told us that the capacity figures that we had used were based upon a proper full year of plant operation, and that given the peaks and troughs in demand, effective capacity would in practice be lower than those used in our analysis. Lafarge Tarmac submitted that its own capacity would be at most [%] per cent of the capacity values used by the CC in its analysis. As a result of this, Lafarge Tarmac submitted that its unit operating costs were underestimated in the analysis (by an estimated £[%] per tonne in 2011) and that this correction would reduce the CC's calculated total GB capacity by approximately [%] kt in 2011, with the likely result that a different (higher-cost) marginal cement plant would be identified by the CC. We note, however, that the capacity estimates we use in this analysis (and which are derived from figures in Appendix 7.2) take into account downtime due to maintenance and performance factors, and are therefore below nameplate capacities. Moreover, although there are some peaks and troughs in the demand for cement, it is possible to store cement for three months which would allow smoothing of production.
4. As set out in Appendix 7.2, Lafarge submitted clinker capacities for its cement works, as well as a measure called 'expected cement capacity'. It describes this as 'a synthetic view of what cement is capable of being produced in the "context" of the constraints for that year'.¹ To assess whether Lafarge's cement works' capacities were constrained by clinker capacity or grinding capacity, we divided expected cement capacity by clinker capacity. If the binding constraint on a cement works is its clinker capacity, the ratio between expected cement capacity and clinker capacity should be close to 1.1. If the cement works' output is constrained by some other factor, the ratio should be significantly below 1.1.
5. The clinker capacity and expected cement capacity of Lafarge's cement works can be found in Table 1. This table also contains the ratio between expected cement capacity and clinker capacity for each cement works. The ratios suggest that Cauldon and Hope are constrained by their clinker capacities, while Aberthaw and

¹ Lafarge Tarmac told us that expected cement capacity was affected by factors outside of its control, including market demand, customer specifications, employment and weather, and that these might impact on the ability to produce at 'expected cement capacity'.

Dunbar are constrained by other factors. This is consistent with Lafarge's statement that Aberthaw is 'grinding constrained'.

TABLE 1 Lafarge's cement works' clinker capacities and expected capacities

Plant	Clinker capacity (tonnes/year)	Expected cement capacity (tonnes/year)	Expected/ clinker
Aberthaw	[REDACTED]	[REDACTED]	[REDACTED]
Cauldon	[REDACTED]	[REDACTED]	[REDACTED]
Dunbar	[REDACTED]	[REDACTED]	[REDACTED]
Hope	[REDACTED]	[REDACTED]	[REDACTED]

Source: Lafarge's response to the market questionnaire, CC calculations.

6. For our analysis, we thus used expected cement capacity for Aberthaw and Dunbar as the measure of cement capacity. For Cauldon and Hope, we used 1.1 times clinker capacity as the measure of cement capacity. Data submitted by Cemex and Hanson suggested that their cement works are constrained by clinker capacity rather than grinding capacity.² For these cement works, we used 1.1 times clinker capacity as a measure of cement capacity. The capacities of GB cement works we used in our analysis can be found in Table 2. Note that with our definition of capacity, these capacities pertain to CEM I. We have not included mothballed capacity in cement works' capacities. The potential for mothballed capacity to alter our conclusions will, however, be considered in our analysis.

TABLE 2 Capacities of GB cement plants

Plant	Capacity (tonnes/year)
Rugby	[REDACTED]
S Ferriby	[REDACTED]
Ketton	[REDACTED]
Padeswood	[REDACTED]
Ribblesdale	[REDACTED]
Aberthaw	[REDACTED]
Cauldon	[REDACTED]
Dunbar	[REDACTED]
Hope	[REDACTED]
Tunstead	[REDACTED]

Source: GB cement producers' response to the market questionnaire, CC calculations.

Cement works' effective capacities to supply England

7. In order to take into account the geographic differentiation between cement works, we calculated the effective capacity of each GB cement work to supply England. The effective capacity of a cement works is its remaining capacity once volumes supplied to Scotland and Wales have been subtracted and measures the cement works' capacity to supply England.
8. To calculate a cement works' effective capacity, we subtracted from actual capacity the volume supplied to Scotland and Wales in 2011 by the works in question. Since we measured a cement works' capacity in terms of potential output of CEM I, we converted any non-CEM-I volumes to CEM I. We assumed that any non-CEM-I volume was 70 per cent CEM I, for example one tonne of CEM II was converted to

² Cemex told us that its cement capacity far exceeded its clinker capacity because of Tilbury, a grinding and blending plant.

Costs and revised distribution costs

GB cement works' operating costs

- As stated in paragraph 28 above, plants' operating costs are the relevant costs in assessing whether or not the plant will be active at a given price. Operating costs include site fixed cost, plants' variable costs and plants' distribution costs, but exclude depreciation and cost of capital as well as divisional and central costs. Table 1 shows GB cement works' operating costs. These figures are based on the GB cement producers' profit and loss data.

TABLE 1 Cement works' 2011 operating costs

Plant	Site fixed cost £	Variable cost £/tonne	Distribution cost £/tonne
Rugby	[REDACTED]	[REDACTED]	[REDACTED]
S Ferriby	[REDACTED]	[REDACTED]	[REDACTED]
Ketton	[REDACTED]	[REDACTED]	[REDACTED]
Padeswood	[REDACTED]	[REDACTED]	[REDACTED]
Ribblesdale	[REDACTED]	[REDACTED]	[REDACTED]
Aberthaw	[REDACTED]	[REDACTED]	[REDACTED]
Cauldon	[REDACTED]	[REDACTED]	[REDACTED]
Dunbar	[REDACTED]	[REDACTED]	[REDACTED]
Hope	[REDACTED]	[REDACTED]	[REDACTED]
Tunstead	[REDACTED]	[REDACTED]	[REDACTED]

Source: GB cement producers' profit and loss data, CC calculations.

- The Cauldon, Rugby, Padeswood and South Ferriby plants are not rail linked. This potentially affects their distribution costs.
- Note that the operating costs in Table 1 pertain to a cement works' entire output. The costs also include the costs of those depots and blending depots that are part of the delivery networks of the cement plants. To the extent that a cement works produces CEM II or other blended products, the cost of producing that output is included in the operating costs. This introduces some imprecision in our analysis as we use the overall variable cost as one of the components of unit operating cost based on CEM I capacity. We do not think that this approximation introduces any material difference as most output is CEM I.
- Lafarge Tarmac told us that the CC had excluded depreciation and amortization costs, and that, to some extent, critical investments made in earlier years were captured by depreciation and amortization costs. Lafarge Tarmac submitted that as a consequence, these were site-specific costs that should be included as operational costs to capture the long-term dynamics of the cement industry.
- Lafarge Tarmac told us that the CC had excluded divisional and central costs from its calculation of plant operational costs. It submitted that these would all be site-specific costs in the CC's single plant model and should not have been excluded. Lafarge Tarmac submitted that these excluded costs would add an estimated £[REDACTED] per tonne to the CC's competitive cement price.
- Cemex told us that the analysis underestimated its unit operating costs, because it had treated as sunk costs a number of costs which were avoidable in the short run, including:

- (a) maintenance costs: Cemex submitted that its expenditure for the annual capital maintenance of its [REDACTED];
 - (b) packaging costs for bagged cement, which are [REDACTED]; and
 - (c) costs of customer service, planning, commercial and technical teams, which are included in Cemex's [REDACTED].
7. Cemex submitted that, in the CC analysis, step changes in costs associated with bringing mothballed capacity back on stream were ignored. It submitted that in practice, any significant increase in output by Cemex would require the [REDACTED].
 8. Hanson told us that the calculation of the operating costs did not take account of all relevant and essential central-head costs (eg operational expertise, brand marketing, product sales, carbon trading and IT infrastructure) that a plant would itself have to incur, and which would be part of site fixed costs, if it were to operate on a stand-alone basis, as is the assumption of the CC's model.
 9. Some of the above comments made relate to the model not taking account of divisional and central costs when, at the same time, the model assumes that plants behave as if they were run on a stand-alone basis. We addressed this comment earlier in paragraph 84. We consider the comment to be misplaced: the model assumes that plants behave as if they were run on a stand-alone basis—making production decisions without considering the impact on other plants operated by the same producer.
 10. We also addressed earlier, in paragraph 86, the comment relating to the costs associated with mothballing a plant and bringing it back online. We also address earlier in paragraph 67 the comments on sunk costs not being taken into account in the model.
 11. Regarding Cemex's comment in paragraph 6, we note that we did include site-specific maintenance costs in our analysis of site unit operating costs. Whilst bagging costs and certain costs listed in (c) were not included, these are relatively low and would be unlikely to significantly change the results.

Distribution costs

12. Distribution costs are significant in relation to a cement works' variable costs. The distribution costs in [Annex B](#), Table 1 were not well adapted to capturing geographic differentiation and differentiation terms of logistic efficiency. We only observed cement works' distribution costs in aggregate. By dividing a given cement works' total distribution cost by its output we got a distribution cost per tonne. Since we did not control for the typical distance over which a cement works' output is transported, we could not arrive at a measure of distribution cost per tonne per mile. It appears plausible that a cement works primarily serves the customers it is best placed to serve, and that cement works with less efficient distribution supply over smaller distances than cement works with more efficient distribution. The observed distribution cost per tonne would reflect this, and thus not be particularly informative about a cement works' location and how efficient a cement works' distribution is.
13. In particular, the observed distribution cost would not represent a good measure of the cost faced by a cement works when supplying customers further afield. The cost of supplying distant customers is likely to be important when assessing how the Dunbar and Aberthaw works affect the competitive price in England. For this reason,

we estimate in the next subsection the costs faced by these plants when supplying customers in England.

Revised distribution costs for Dunbar and Aberthaw

14. Lafarge’s transaction data contained an estimated haulage cost of shipments. Since the transaction data distinguishes between regions and identifies a shipments works of manufacture, the data can be used to estimate the cost of hauling cement from works of manufacture to a given region. We have used 2011 transactions for our estimates.
15. Lafarge estimated haulage costs in its transaction data. To evaluate the reliability of these estimates, we compared the volume-weighted 2011 average haulage cost per tonne with the average 2011 distribution cost per tonne as estimated from Lafarge’s profit and loss data.
16. Table 2 below contains Lafarge’s cement works’ haulage costs as estimated from transaction data and distribution costs as estimated from profit and loss data. Note that we excluded collected sales when we calculated haulage costs based on transactions data. We did so on account of collected sales not being informative of haulage cost.

FIGURE 1

Lafarge’s cement works’ haulage and distribution costs

[✂]

Source: Lafarge transaction data, Lafarge profit and loss data, CC calculations.

TABLE 2 **Estimated haulage cost and distribution cost per cement works**

Works	£/tonne	
	Estimated cost based on	
	Transaction data	Profit and loss data
Aberthaw	[✂]	[✂]
Cauldon	[✂]	[✂]
Dunbar	[✂]	[✂]
Hope	[✂]	[✂]

Source: Lafarge transaction data, Lafarge profit and loss data, CC calculations.

Note: We excluded collected sales when calculating the haulage costs from transaction data.

17. Figure 1 shows that the average estimated haulage cost based on the transaction data is generally below the average distribution cost based on the profit and loss data. For Aberthaw, there is a discrepancy of approximately £[✂] per tonne. In the case of Dunbar, there is a discrepancy of around £[✂] per tonne.
18. Because of the discrepancy between haulage costs (as estimated from transaction data) and distribution cost (as estimated from profit and loss data), we have decided not to base our estimates of Aberthaw’s and Dunbar’s costs of supplying England on the transaction data haulage cost alone. We believe the profit and loss data to be more reliable as a measure of average distribution cost per tonne. The transaction data haulage costs appear to be approximated based on radial distances. Since cement will in practice not be transported in straight lines, this approximation will

underestimate the cost of haulage. However, we believe that the transaction data can be informative about the relative costs of hauling cement to various regions. To reconcile these views we rescale the costs of hauling to England in a manner that makes the average haulage cost equal to the average distribution cost, as estimated from the profit and loss data.

Dunbar

19. Table 3 shows estimated haulage costs for the Dunbar works.

TABLE 3 Volume-weighted average 2011 haulage costs for destinations inside and outside Scotland

Destination	Haulage cost £/tonne
Scotland	[£]
Other	[£]

Source: Lafarge transaction data.

Note: We excluded collected sales when calculating the haulage costs from transaction data.

20. Since there is an economically significant difference in the cost of haulage depending on whether the destination is in Scotland or not, we believe there is a need to revise the distribution cost to reflect this.
21. The distribution cost, as estimated from profit and loss data, is a weighted average of the cost of distributing cement to customers in Scotland and the cost of distributing cement to customers outside Scotland.¹ We assume that sales collected by customers do not incur delivery costs. Based on the figures in Table 3, we assume that the cost of distributing cement to customers outside Scotland is approximately 1.2 times the cost of distributing cement to customers in Scotland. These two restrictions identify the cost of distributing cement to customers in Scotland and the cost of distributing cement to customers outside Scotland.²
22. Based on the Lafarge transaction data, we have calculated the volume delivered from Dunbar to destinations in Scotland in 2011, the volume delivered from Dunbar to destinations outside Scotland in 2011 and the volume collected at Dunbar by customers in 2011. The results are in Table 4. Based on these volumes, we calculated the weights we used in the first restriction described in the previous paragraph. The 2011 average distribution cost is £[£] per tonne (see Table 3). Our estimate of the distribution cost for destinations outside Scotland is thus £[£] per tonne.

¹ Let c be the distribution cost as estimated from profit and loss data. Then $c = (q^C c^C + q^S c^S + q^O c^O) / Q$, where c^C is the cost incurred when customer collects and c^S and c^O are the costs of distributing to Scotland and outside Scotland, respectively, q^C is the volume collected by customers, q^S is volume distributed to Scotland, q^O is volume distributed outside Scotland and $Q = q^C + q^S + q^O$. The costs c^S and c^O are unobserved, while q^S and q^O are observable in e.g. transaction data.

² We have assumed that $c^S = \gamma c^O$, with $\gamma = 1.25$ and that $q^C = 0$. From these restrictions and the restriction set out in the previous footnote, it follows that $c^S = c / (q^S / Q + \gamma q^O / Q)$.

TABLE 4 **Dunbar 2011 volumes according to destination**

	<i>Volume tonnes</i>
Collect	[REDACTED]
Scotland	[REDACTED]
Outside Scotland	[REDACTED]
Total	[REDACTED]

Source: Lafarge transaction data.

Aberthaw

23. Table 5 shows estimated haulage costs for the Aberthaw works. These are higher for destinations outside Wales than for destinations in Wales. We believe that the differences could potentially be economically significant.¹

TABLE 5 **Volume-weighted average 2011 haulage costs for destinations inside and outside Wales**

<i>Destination</i>	<i>Haulage cost £/tonne</i>
Wales	[REDACTED]
Other	[REDACTED]

Source: Lafarge transaction data.

Note: We excluded collected sales when calculating the haulage costs from transaction data.

24. Since there is an economically significant difference in the cost of haulage depending on whether the destination is in Wales or not, we believe that there is a need to revise the distribution cost to reflect this fact. We adjusted the cost in the same way as we adjusted Dunbar's distribution cost. Based on the figures in Table 5, we assume that the cost of distributing cement to customers outside Wales is approximately 2.2 times the cost of distributing cement to customers in Wales.
25. Based on the Lafarge transaction data, we have calculated the volume delivered from Aberthaw to destinations in Wales in 2011, the volume delivered from Aberthaw to destinations outside Wales in 2011 and the volume collected at Aberthaw by customers in 2011. The results are in Table 6.

TABLE 6 **Aberthaw 2011 volumes according to destination**

	<i>Volume tonnes</i>
Collect	[REDACTED]
Wales	[REDACTED]
Outside Wales	[REDACTED]
Total	[REDACTED]

Source: Lafarge transaction data.

26. Aberthaw's 2011 average distribution cost is £[REDACTED] per tonne (see [Annex B](#), Table 1). Our estimate of the distribution cost for destinations outside Wales is thus £[REDACTED] per tonne.

¹ Lafarge Tarmac told us that transporting from Aberthaw involved payment of a toll when supplies were transported into England over the Severn Bridge.

27. Hanson told us it did not understand why, in the context of adjusting distribution costs, we had not considered the challenges of Padeswood for which Hanson gave as an example the fact that that plant was not located on a quarry. The adjustment we made to the distribution costs of Aberthaw and Cauldon stems from the fact that we identified a significant enough difference between the estimated distribution costs from those plants as reported in the transaction data supplied to us by Lafarge and the distribution costs for those plants as calculated from P&L. We have no grounds to revisit the distribution costs for Padeswood as reported in the transaction data Hanson provided to us.

Demand and residual demand

1. In this annex, we set out our model of GB demand for cement. In order to capture the effect of cement works' locations, we calculate a residual demand. This is the demand that remains once GB cement works have filled the demand they face in Scotland and Wales. The annex has two sections. In the first section, we describe GB demand. In the second section, we derive the residual demand.

GB cement demand

2. CEM I is the appropriate product to consider in this case, since capacities as set out in [Annex A](#) measure cement works' capacity to produce CEM I. CEM I is blended to produce other types of cement. Sales of cement other than CEM I thus indirectly contribute to demand for CEM I. We assumed that blended cement and bagged cement contained on average 70 per cent CEM I.¹
3. Table 1 below contains demand for various types of cement in GB in 2011. Based on the figures in Table 1 and our assumption that blended cement and bagged cement contain on average 70 per cent CEM I, we estimated demand for CEM I in GB in 2011 at 8.78 million tonnes. We assumed that unclassified sales are CEM I, on the grounds that these are sales made by minor importers and our understanding that most imported cement is CEM I.

TABLE 1 GB 2011 demand for cement

<i>tonnes</i>			
<i>Bulk</i>		<i>Bagged</i>	<i>Unclassified</i>
<i>CEM I</i>	<i>Non-CEM-I</i>		
6,187,410	1,412,413	1,712,545	409,039

Source: GB cement producers' and importers' transaction data, CC calculations.

4. Our estimate of demand for CEM I was not particularly sensitive to changes in the assumption about the proportion of CEM I in blended cement and bagged cement. Changing the proportion of CEM I by ten percentage points changed the estimated demand for CEM I by less than 4 per cent. This was a consequence of most GB cement sales being sales of CEM I.
5. GB cement works' total active capacity in 2011 was just over 9.5 million tonnes of CEM I per year. The available capacity was thus sufficient to meet demand in 2011. GB cement works meeting GB demand would have required cement works operating at approximately 92 per cent of full capacity.

Residual cement demand

6. We defined the residual demand as the demand that remains once GB cement works have filled the demand they face in Scotland and Wales. We calculated the demand faced in Scotland and Wales in 2011 from Table 3 in [Annex A](#) by summing up the volumes supplied by each cement works in these regions. This gave us an estimated

¹ This figure is consistent with MPA data on members' clinker production and GB cement producers' transaction data.

demand of 1.07 million tonnes, which we subtracted from the GB demand of 8.78 million tonnes to arrive at an estimated residual demand of 7.7 million tonnes.

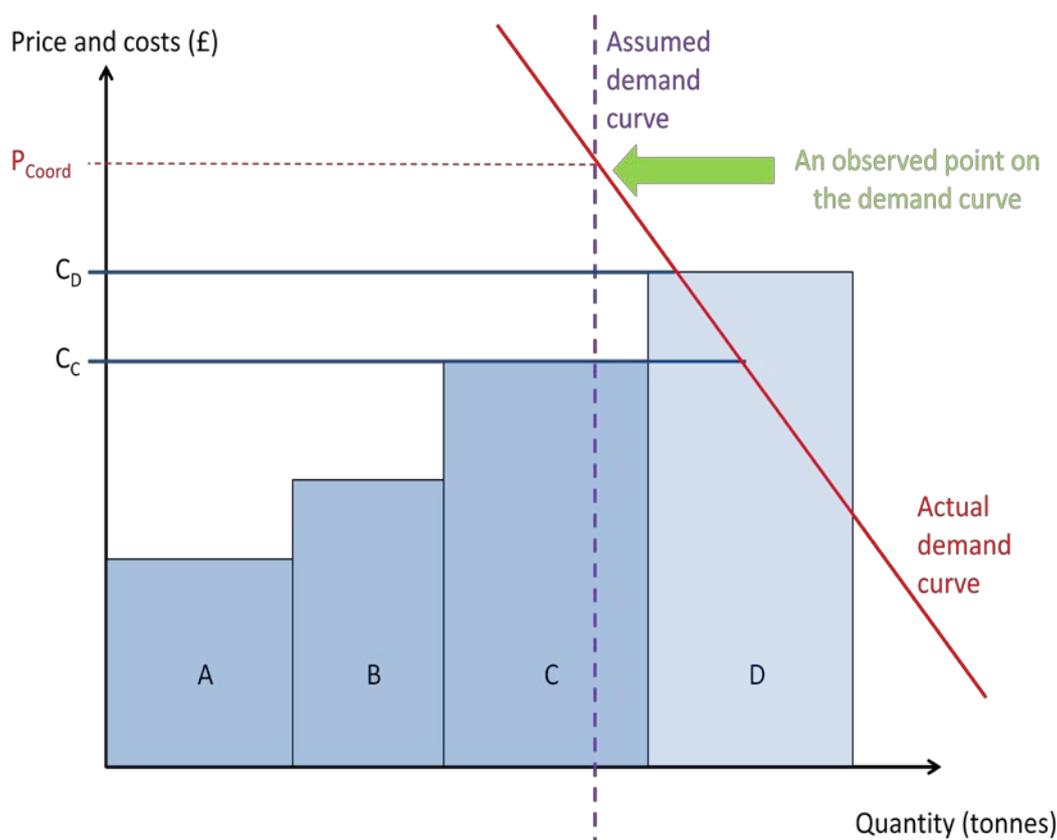
Dealing with elastic demand

1. In our analysis, we assumed that demand for cement was given, ie that customers would buy the same quantity of cement irrespective of price. While we believe demand for cement is likely to change only moderately in response to price changes,¹ we recognize that assuming that demand is given can affect the conclusions of our analysis. In this annex, we evaluate the consequences of this assumption.
2. In our analysis, we assumed that the GB demand for cement was equal to the quantity of cement sold in GB in 2011 and that customers would demand this quantity irrespective of price. Realized GB demand in 2011 is a point on the demand curve for cement. We believe the price in 2011 was elevated due to coordination between GB cement producers and the GGBS arrangements. If demand for cement is, in fact, somewhat elastic, then demand would be higher at any price below the 2011 price. In particular, demand would be higher at a market-clearing price calculated based on a competitive supply curve and a given demand.
3. If the demand curve is elastic, a competitive price estimate based on an assumption of given demand might thus fail to be a market-clearing price. This failure results from demand potentially exceeding supply at such a price. Available capacity might simply not be sufficient to accommodate expanded demand due to the lower price. This is illustrated in Figure 1 below, where there would be excess demand at any price between the unit operating cost of the marginal plant if demand is given (Plant C) and the most efficient inactive plant (Plant D).

¹ Cement is an intermediate good. It serves as an input and typically accounts for a limited fraction of the total cost of the final product. Cement price increases are thus likely to be passed on to customers of the final product.

FIGURE 1

Demand at decreased price depending on elasticity of demand



Source: CC.

4. We note that while elastic demand means that the benchmark price will increase, it does not follow that total customer detriment will necessarily decrease as a consequence. This is apparent from inspection of Figure 4. When demand is responsive to price, any price below the coordinated price implies increased demand. Sales forgone due to the elevated price represent a source of customer detriment. If demand were actually elastic, plant D would be the marginal plant. The customer detriment due to forgone sales is represented by the triangle between the vertical, assumed demand curve, the actual demand curve and the line representing the unit operating cost of plant D. If demand were responsive to price, this customer detriment would be non-zero. There are thus two opposing effects at work and the effect on total customer detriment is therefore not clear-cut. In particular, it is not obvious that the assumption of given demand would result in an overestimate of total customer detriment.
5. While we did not have access to an estimate of how elastic the GB demand for cement is, we could derive an upper bound on how elastic demand can be and still accommodate an expansion in demand due to a lower price. If the demand for cement would have to be unreasonably inelastic for the market to balance at our estimated competitive price, we would have less confidence in the validity of our estimate.
6. We calculated bounds on the elasticity for demand in two scenarios:
 - (a) a scenario where [Plant 1] is active but [Plant 3] is not; and

(b) a scenario where [Plant 3] is active.

7. Throughout the analysis, we assumed that the coordinated price was £80 per tonne. Our analysis relied on the observation that in any scenario, demand could expand by at most a quantity equal to available spare capacity (measured relative to 2011 demand) before balance of supply and demand is violated.
8. In the first scenario, the competitive price is between £66.60 per tonne and £69.50 per tonne. These prices correspond to reductions of 16 and 13 per cent relative to the coordinated price, respectively. There would be virtually no available spare capacity at any price below £69.50 per tonne. Demand would need to be very inelastic for supply and demand to balance.¹
9. In the second scenario, the competitive price is £69.50 per tonne or above. A price of £69.50 per tonne represents a reduction of 13 per cent relative to the average price of cement in 2011. With both [Plant 1] and [Plant 3] active spare capacity would be around [X] kt per year. In this scenario, demand could thus expand by just under 4 per cent relative to realized 2011 GB demand before demand exceeds supply. To a first approximation, demand price elasticity would, in absolute terms, have to be 0.3 or less for supply and demand to balance at the competitive price.

¹ Our estimate of the elasticity of demand was the negative of the relative change in demand divided by the relative change in price. This is equivalent to assuming that the demand curve is linear. Compared with the elasticities implied by a constant elasticity of demand system, the approximation results in slightly more elastic demand.

Estimate of the detriment in GGBS based on the GGBS profitability analysis

1. In this appendix, we set out our calculations of the estimated customer detriment arising from the AEC in the GGBS market based on our analysis of the profitability of Hanson's GGBS activities (Appendix 7.16).

Estimates of the detriment in GGBS

2. Table 1 below is based on Appendix 7.16, Tables 4 and 7. We have calculated the excess profitability as Hanson's return on capital less a cost of capital of 10 per cent. This cost of capital represents the midpoint of our estimate of the GB cement producers' cost of capital, as set out in Appendix 4.2. Excess profit in each year is excess profitability in that year multiplied by capital employed in that year (ie total net assets). Excess profit per tonne is excess profit divided by Hanson's GGBS sales. This is our estimate of the amount by which GGBS prices are overcharged, which translates into an equivalent overcharge in the ultimate price of cement paid by RMX producers.

TABLE 1 Overcharge in GGBS prices

	2007	2008	2009	2010	2011	2012	Period average
Capital employed after impairment (£m)	[X]						
Profits after impairment	[X]						
Profits/average capital employed (%)	[X]	[X]	[X]	[X]	[X]	[X]	28
GGBS sales (m tonnes)	[X]						
Excess industry return	[X]	[X]	[X]	[X]	[X]	[X]	[15–20]
Excess industry profit (£m)	[X]	[X]	[X]	[X]	[X]	[X]	[15–20]
Excess profit per tonne (£)	[X]	[X]	[X]	[X]	[X]	[X]	[10–15]

Source: CC, based on Appendix 7.16, Tables 4 and 7.

3. The estimated excess profit per tonne varies from year to year between £[X]/tonne in 2009 and £[X]/tonne in 2010. We have calculated excess profit per tonne based on average capital employed across the period, average profit across the period and average annual sales of GGBS across the period. This results in an average excess profit per tonne of £[10–15] between 2007 and 2012, and average excess profits of £[15–20] million per year between 2007 and 2012.

Hanson's comments

4. Hanson commented on our approach to estimating the customer detriment in GGBS. Some of Hanson's comments related to Hanson's view that the (alleged) detriment would not necessarily disappear if we were to impose the divestments of GGBS and GBS plants we provisionally decided on in the provisional decision on remedies. We consider these points elsewhere, namely in our assessment of the effectiveness of the remedies (see Section 13, paragraphs 13.228 to 13.240). Here, we focus on Hanson's comments on our approach in estimating customer detriment in GGBS.
5. In this respect, Hanson raised the following points:

- (a) Hanson told us that it was clear from evidence we presented that third parties considered the prices to be reasonable and/or certainly not as being too high.¹ In the light of this, Hanson submitted that it was not clear how we could regard the GGBS prices as being on such a level that they give rise to a customer detriment.
- (b) Hanson told us that the difference between Hanson's return on capital employed and the weighted average cost of capital could be explained by benign and valid reasons (eg superior efficiency of GGBS production compared with cement production),² and that these reasons would exist even in a competitive market, so that it was incorrect to label the difference as a 'detriment'.
- (c) Hanson submitted that we had not followed the principles outlined in case law to demonstrate that GGBS prices were 'excessive'.³
- (d) Hanson told us that we had not established that, after the divestments, the market structure would necessarily be conducive to significantly lower prices. In this context, Hanson submitted that (i) there were binding supply constraints; (ii) market power would be exercised further up the supply chain; and (iii) the market would remain highly concentrated.⁴
6. We address these points in turn.
7. In relation to point (a), we set out in a footnote to paragraph 8.410 the reasons why we would not necessarily expect customers to express concerns over the pricing of cement. The same reasons apply for GGBS. We also note that some customers expressed concerns to us regarding the pricing of GGBS (see paragraph 7.294). Moreover, as the large majority of GGBS produced by Hanson is sold internally and to other Majors (see Appendix 7.6), we would not necessarily expect customers to raise concerns to us on the pricing of GGBS.
8. We turn to point (b). The 'benign' explanation put forward by Hanson does not take into account the fact that we have found that there are features of the GB cement markets that give rise to an adverse effect on competition in the market for the supply of GGBS in GB (see paragraph 8.485) resulting in GGBS prices being higher than they would otherwise be. Our view on the existence of those features stems from our assessment of the evidence in the round on competitive effects in GGBS, taking into account, among other things, the structure of the GGBS market, the contractual relations between relevant parties and evidence on observed outcomes. It is not based solely on observing returns above cost of capital.
9. In relation to point (c), we note that our assessment is not concerned with whether Hanson has abused a dominant position by charging excessive prices. Rather, our analysis is based on estimating how much higher GGBS prices are compared with those in a well-functioning market, where the features that we have identified as having an adverse effect on competition are not present. We considered that a comparison of Hanson's returns against the cost of capital provided a reasonable estimate of that difference.
10. As noted earlier, we address the points raised in (d) as part of our assessment of the effectiveness of our remedy in Section 13 in paragraphs 13.228 to 13.240.

¹ [Hanson response to provisional decision on remedies](#), Annex IV, paragraphs 1 & 2.

² [Hanson response to Addendum to provisional findings](#), paragraph 8.2.

³ [Hanson response to provisional decision on remedies](#), Annex IV, paragraphs 3–15.

⁴ [Hanson response to Addendum to provisional findings](#), paragraph 8.4.

Effect of Hanson's participation in both cement and GGBS markets on GGBS pricing

1. In this appendix, we provide more detail on the effect of Hanson's participation in both cement and GGBS markets on GGBS pricing.
2. The incentives for Hanson to reduce prices of GGBS by (say) 5 per cent, from a starting point of margin m , can be written as follows:
 - (a) GGBS profit impact: increase in sales of GGBS by X tonnes (dependent on elasticity of demand).
 - (b) Cement profit impact: reduction in sales of cement by Hanson by 20 per cent of up to X tonnes; depending on the cross-elasticity of demand for cement to price of GGBS.¹
3. Compared with a situation where Hanson is not a cement producer, Hanson has 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:
 - (a) 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.
 - (b) 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.
 - (c) Cement market share: the larger the cement market share of Hanson, the more impact on its cement sales.
4. We can see the above effects by looking at a formal representation of a simple model of Hanson's profits, focusing on the interaction between GGBS and CEM I and leaving aside the complexities associated with blended cement and concrete. For a given price of CEM I, we can think of Hanson's profit function (π) as:

$$\pi = (p^G - c^G)Q^G(p^G, p^C) - F^G + (p^C - c^C)S^H Q^C(p^G, p^C) - F^C$$
 where p are prices, c are the variable costs, F are fixed costs, Q are quantities demanded in the relevant market, and superscript G stands for GGBS and superscript C stands for CEM I. S^H is the market share of Hanson in the cement market.
5. For a given price of CEM I and assuming that total cement demand is distributed among cement suppliers in proportion to their market share (so that, if total cement demand reduces by 100 tonnes, Hanson would lose 20 tonnes corresponding to a 20 per cent market share), Hanson's optimal GGBS price will solve:

¹ There may also be an impact on downstream internal sales of RMX by Hanson if it reduces the price of GGBS to competing RMX producers; in the following we do not take into account this effect because we found that RMX was competitive and therefore we implicitly assume that Hanson cares about overall sales of GGBS, not whether these sales are through internal RMX or to competitors.

$$\left[Q^G - (p^G - c^G) \times \varepsilon^G \times \frac{Q^G}{p^G} \right] + \left[(p^C - c^C) S^H \times \varepsilon_{G^C}^C \times \frac{Q^C}{p^G} \right] = 0$$

where ε^G is the own-price elasticity of GGBS, and $\varepsilon_{G^C}^C$ is the cross-elasticity of CEM I demand to price of GGBS.

6. Were Hanson not to be active in cement, the left-hand side of the equation would contain only the terms within the first square brackets. As it is, there is an additional set of terms, those within the second square brackets, which will be factored into Hanson's pricing decision for GGBS and which represents the impact of any increase in GGBS price on cement demand. This factor will mean that the optimal price of GGBS is higher than it would be if this effect was not taken into account. The strength of the effect will depend mainly on:
- (a) The cross-elasticity of CEM I demand to price of GGBS: the more CEM I demand increases when GGBS prices increase, the higher the optimal GGBS price.
 - (b) The cement margin (and how this compares with the GGBS margin): the larger the CEM I margins relative to GGBS margin, the higher the optimal GGBS price because an increase in cement sales will be 'worth more', in profit terms, than the losses as a result of a reduction in GGBS demand.
 - (c) The market share of Hanson in the cement market: the larger Hanson's market share, the higher the optimal GGBS price because Hanson is better able to make up for lost GGBS sales as cement sales increase.

Barriers to entry and expansion in the provision of RMX

Introduction

1. In this appendix, we set out some of the views and evidence presented to us by parties in relation to barriers to entry and expansion in the supply of RMX.

Capital cost

2. The Majors told us that the capital investment required for RMX production was low. Their estimates are set out in Table 1:
 - Lafarge told us that the cost of building an RMX plant could range from £0.3 million to £1.5 million for a large fixed installation, and that minimal upfront investment would be required in either land or trucks as they could be leased (or the transport could be subcontracted).
 - Tarmac estimated the cost to be from £0.1 million for a second-hand plant to £1.5 million for a new large-scale installation, and also told us that no initial investment would be required in relation to transport as trucks could be leased or the delivery subcontracted.
 - Hanson said that the cost would be between £[redacted] million for a small-scale plant to £[redacted] million for a large-scale plant.

TABLE 1 Parties' estimates of capital cost of RMX plants

	<i>£ million</i>			
	<i>Plant scale: small/medium/large</i>	<i>Small scale</i>	<i>Medium scale</i>	<i>Large scale</i>
Aggregate Industries	[redacted]	[redacted]	[redacted]	[redacted]
Cemex	[redacted]	[redacted]	[redacted]	[redacted]
Hanson	[redacted]	[redacted]	[redacted]	[redacted]
Lafarge			[redacted]	
Tarmac	[redacted]	[redacted]	[redacted]	[redacted]

Source: The Majors.

3. The Majors told us that entry into the RMX market using volumetric trucks required very little investment as the trucks could be purchased second-hand or leased.
4. Leiths told us that a mobile RMX plant and concrete mixer trucks would require investment of approximately £0.7 million. It said that a static plant in rural Scotland would cost approximately £1 million to establish, including concrete mixer trucks, while an urban plant would cost more, up to £2 million, owing to the site acquisition costs. Leiths also said that the cost of entry using volumetric trucks would be less than £250,000.
5. [An operator of volumetric trucks] told us that the initial capital cost of entering the RMX market with one volumetric truck was between £220,000 and £240,000. The operator said that the main cost items were the volumetric truck (£160,000), a cement silo (£30,000), a loading shovel for loading aggregates (£15,000 to £20,000) and tanks for water and diesel.

Availability of raw material

6. Cemex and Lafarge told us that aggregates and cement were readily available from suppliers in the UK and Europe and therefore they did not consider access to raw materials to be a barrier to entry. Cemex noted that independent RMX producers formed an essential customer base for its cement business. Hanson told us that it sold a significant proportion (some [redacted] per cent) of its cement production to independent RMX producers, which it considered to be a crucial segment of its customer base. Hanson also noted 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. Aggregate Industries noted that RMX producers had a significant choice of suppliers of aggregates. Tarmac also noted that supplies of cement and aggregates were readily available to RMX producers given the excess capacity in aggregates and cement and the availability of imported cement.
7. Breedon Aggregates told us that it had not encountered any problems with obtaining cement for its RMX plants during periods of heightened RMX competition with its cement suppliers.
8. Leiths, on the other hand, told us that access to supplies of aggregates and competitively priced cement was a potential barrier to entry. Leiths also said that in some areas of Scotland it was difficult for it to compete with the vertically-integrated RMX/cement majors because the Majors could control the price of the cement that went into Leiths' RMX. Leiths said that it had planning permission for a new RMX plant in south-east Edinburgh but the investment was not viable because the Majors ensured that concrete prices remained low.

Planning permission

9. Lafarge and Tarmac told us that any planning consents required could be obtained within three months of application and therefore they did not consider planning permission to be a barrier to entry.

Barriers to expansion

10. The Majors told us that increasing production at an RMX plant based on its existing capacity would be straightforward when prevailing levels of capacity were low. Hanson noted that there might be planning limits on the maximum operating hours or vehicle movements at a site, but since most plants were currently operating below capacity, in practice any planning limits would not, in Hanson's view, constrain an increase in production. Lafarge said that almost all of its RMX plants had significant spare capacity and that there were no barriers to expanding production within their existing capacity. It also noted that variable costs constituted [redacted] per cent of total cost of sales in the RMX business, and therefore no significant increase in fixed costs would be incurred to increase production within existing capacity.

11. The Majors also told us that there were no significant barriers to increasing capacity at an existing RMX site. Aggregate Industries noted that planning permission might be required. Lafarge said that increasing capacity at a site would be likely to be achieved by replacing the plant with a higher-capacity model. Lafarge noted that a revision to the site's planning consent would probably be required but this would not be costly or difficult. Lafarge also noted that its RMX plants typically operated at [X] per cent capacity and therefore production capacity was unlikely to be a barrier to increasing output. Hanson noted that potential limits on increasing plant capacity might include the requirement for some capital investment in new plant or plant modifications and planning constraints, but the extent to which these factors constituted actual barriers would depend on site-specific circumstances.

Analysis of the Majors' profitability in the supply of RMX

Introduction

1. The purpose of this appendix is to analyse the profitability of the Majors' RMX operations in accordance with our profitability framework as set out in Appendix 4.1. This framework sets out the various purposes of our profitability analysis and the methodological approach adopted to derive our chosen measure of profitability.
2. Most facets of the framework for assessing profitability, for example our chosen measure of profitability and the overarching approach to valuing a firm's asset base, are common across all three product markets being investigated and as such are set out once in Appendix 4.1. We have not identified methodologies which are specific to RMX. As a result this appendix contains no further explanation or justification of how we have prepared the numbers we present.
3. The results in this appendix are presented on the same basis of preparation that each Major adopts for its UK statutory reporting. We refer to this basis as historical cost accounting (HCA). However, it is the case that some Majors at one stage or another have revalued some of their assets. This basis of preparation is known as modified HCA. In this appendix we refer to (modified) HCA when referring to the Majors' existing basis of preparation.
4. We have not made any adjustments to the basis of preparation on which the firms provided their financial information in respect of their RMX operations, namely (modified) HCA. In contrast to the profitability analysis for the cement, GBS and GGBS product markets, we have not, as explained in paragraph 26, also sought to present profitability on a CCA¹ basis.

Structure of the appendix

5. This appendix sets out:
 - (a) basics of RMX production (paragraphs 6 and 7);
 - (b) results of analysis (paragraphs 8 to 13);
 - (c) findings and interpretation (paragraphs 14 to 19); and
 - (d) implications of CCA accounting for RMX profitability (paragraphs 20 to 26).

Basics of RMX production

6. In Section 2 we provide some background information on the reference markets including that relating to the RMX market. The purpose of this subsection is to describe the key activities and inputs required to produce, distribute and sell RMX, namely the activities to which the profitability information we present relates.

¹ See second footnote to paragraph 4.14 for an explanation of the modified HCA and CCA bases of preparation.

7. The key inputs into RMX are cement, aggregates and water. These inputs are typically mixed together at a permanent site where silos store the cement and there is space to store aggregates. RMX is mixed in mixing equipment and then piped into specialist lorries (with the rotating drums) which then deliver the RMX to a job at a construction site before the RMX sets hard. As this setting process typically takes place within 1 to 2 hours, there is a limit to how far away from the permanent site in travelling time a firm can deliver its product. The capacity of the road network and dependability of local traffic conditions will also be factors in the economic delivery area for a particular site. Ease of access to aggregates and cement, both of which are heavy and bulky ingredients, will also be potentially important factors in the viability of an individual site.

Results of analysis

8. We determine profitability on a ROCE basis over the period 2007 to 2011. The approach taken to determine capital employed is to value the Majors' assets as reflected in their own financial statements. These ROCE figures have been calculated on a pre-interest and pre-tax nominal basis using year-end capital employed. All the Majors have December financial year ends.
9. We make a distinction between adjustments to the basis of preparation² and the scope³ of the operating revenues, costs, assets and liabilities relevant to our assessment. This means that the analysis of HCA profitability reflects as far as practically possible our view of what is relevant, rather than necessarily the activities the firm would reflect within financial information prepared for its own purposes.
10. Costs include all direct and indirect costs identified by the Majors as attributable to their RMX operations. These costs will therefore include, to the extent identified, costs incurred at the UK parent level, and in some cases, by the foreign ultimate holding company. However, to the extent that these costs are in fact causally related to the production and sale of RMX, they are likely to be variable with the levels of production in the medium to longer term.

Results for the Majors as a whole

11. In Table 1 below, in addition to presenting summary profit and loss accounts and balance sheets totalled across all the Majors, we also provide the volume of RMX sold in each year. This volume information gives an indication of the extent of the downturn experienced in this market during the period of review.

² A change to the basis of preparation would be to restate assets on their current value to the business rather on the basis of their historical cost or a revalued amount.

³ See Appendix 4.1, paragraphs 60–63.

TABLE 1 **Total (modified) HCA profit and loss accounts and balance sheets for Majors and ROCE calculated thereon**

	2007	2008	2009	2010	2011
<i>Volumes</i>					
RMX sales volumes (million m ³)	22.7	19.5	13.9	13.7	14.7
<i>£ million</i>					
<i>HCA profit and loss</i>					
Revenues	1,299	1,211	925	873	944
Costs excluding depreciation	-1,282	-1,208	-968	-928	-988
HCA depreciation	<u>-15</u>	<u>-17</u>	<u>-20</u>	<u>-20</u>	<u>-18</u>
Profits reflecting all costs incurred	<u>2</u>	<u>-14</u>	<u>-63</u>	<u>-75</u>	<u>-62</u>
<i>HCA balance sheet</i>					
Plant and machinery/AICC	159	164	153	147	134
Other fixed assets	46	58	69	64	65
Net current assets	84	59	34	21	34
Provisions	<u>-5</u>	<u>-7</u>	<u>-7</u>	<u>-9</u>	<u>-7</u>
Total assets	<u>284</u>	<u>275</u>	<u>249</u>	<u>223</u>	<u>226</u>
<i>ROCE</i>					
Profit/year-end capital employed (%)	0.7	-5.1	-25.2	-33.6	-27.5

Source: CC analysis based on Tables 3(a) to (e).

Firm-specific return on capital employed

12. In Table 2 we set out our estimates of each Major's ROCE from supplying RMX in each of the years over the period of review, 2007 to 2011 as well as providing an overall weighted average figure for each of the years.

TABLE 2 **Calculated ROCE for each Major and in total over the period 2007 to 2011**

	<i>Profit/capital employed (%)</i>				
	2007	2008	2009	2010	2011
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]
Total	0.7	-5.1	-25.2	-33.6	-27.5

Source: CC analysis based on Tables 3(a) to (e).

Firm-specific results detail

13. In Tables 3(a) to (e) we set out for each Major at a high level its (modified) HCA profit and loss account and balance sheet relating to each year and our calculation of its ROCEs based on this information.

TABLE 3(a) **Cemex: HCA summary results and ROCEs based thereon**

	2007	2008	2009	2010	2011
<i>Volumes</i>					
RMX sales volumes (million m ³)	[X]	[X]	[X]	[X]	[X]
<i>£ million</i>					
<i>HCA profit and loss</i>					
Revenues	[X]	[X]	[X]	[X]	[X]
Costs excluding depreciation	[X]	[X]	[X]	[X]	[X]
HCA depreciation	[X]	[X]	[X]	[X]	[X]
Profits reflecting all costs incurred	[X]	[X]	[X]	[X]	[X]
<i>HCA balance sheet</i>					
Plant and machinery/AICC	[X]	[X]	[X]	[X]	[X]
Net current assets	[X]	[X]	[X]	[X]	[X]
Total assets	[X]	[X]	[X]	[X]	[X]
<i>ROCE</i>					
Profit/year-end capital employed (%)	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based on information provided by Cemex.

Notes: [X].

TABLE 3(b) **Hanson: HCA summary results and ROCEs based thereon**

	2007	2008	2009	2010	2011
<i>Volumes</i>					
RMX sales volumes (million m ³)	[X]	[X]	[X]	[X]	[X]
<i>£ million</i>					
<i>HCA profit and loss</i>					
Revenues	[X]	[X]	[X]	[X]	[X]
Costs excluding depreciation	[X]	[X]	[X]	[X]	[X]
HCA depreciation	[X]	[X]	[X]	[X]	[X]
Profits reflecting all costs incurred	[X]	[X]	[X]	[X]	[X]
<i>HCA balance sheet</i>					
Plant and machinery/AICC	[X]	[X]	[X]	[X]	[X]
Other fixed assets	[X]	[X]	[X]	[X]	[X]
Net current assets	[X]	[X]	[X]	[X]	[X]
Provisions	[X]	[X]	[X]	[X]	[X]
Total assets	[X]	[X]	[X]	[X]	[X]
<i>ROCE</i>					
Profit/year-end capital employed (%)	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based on information provided by Hanson.

TABLE 3(c) **Tarmac: HCA summary results and ROCEs based thereon**

	2007	2008	2009	2010	2011
<i>Volumes</i>					
RMX sales volumes (million m ³)	[X]	[X]	[X]	[X]	[X]
<i>£ million</i>					
<i>HCA profit and loss</i>					
Revenues	[X]	[X]	[X]	[X]	[X]
Costs excluding depreciation	[X]	[X]	[X]	[X]	[X]
HCA depreciation	[X]	[X]	[X]	[X]	[X]
Profits reflecting all costs incurred	[X]	[X]	[X]	[X]	[X]
<i>HCA balance sheet</i>					
Plant and machinery/AICC	[X]	[X]	[X]	[X]	[X]
Other fixed assets	[X]	[X]	[X]	[X]	[X]
Net current assets	[X]	[X]	[X]	[X]	[X]
Provisions	[X]	[X]	[X]	[X]	[X]
Total assets	[X]	[X]	[X]	[X]	[X]
<i>ROCE</i>					
Profit/year-end capital employed (%)	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based on information provided by Tarmac.

TABLE 3(d) **Aggregate Industries: modified HCA summary results and ROCEs based thereon**

	2007	2008	2009	2010	2011
<i>Volumes</i>					
RMX sales volumes (million m ³)	[X]	[X]	[X]	[X]	[X]
<i>£ million</i>					
<i>HCA profit and loss</i>					
Revenues	[X]	[X]	[X]	[X]	[X]
Costs excluding depreciation	[X]	[X]	[X]	[X]	[X]
HCA depreciation	[X]	[X]	[X]	[X]	[X]
Profits reflecting all costs incurred	[X]	[X]	[X]	[X]	[X]
<i>HCA balance sheet</i>					
Plant and machinery/AICC	[X]	[X]	[X]	[X]	[X]
Other fixed assets	[X]	[X]	[X]	[X]	[X]
Net current assets	[X]	[X]	[X]	[X]	[X]
Provisions	[X]	[X]	[X]	[X]	[X]
Total assets	[X]	[X]	[X]	[X]	[X]
<i>ROCE</i>					
Profit/year-end capital employed (%)	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based on information provided by Aggregate Industries.

TABLE 3(e) Lafarge: HCA summary results and ROCEs based thereon

	2007	2008	2009	2010	2011
<i>Volumes</i>					
RMX sales volumes (million m ³)	[X]	[X]	[X]	[X]	[X]
<i>£ million</i>					
<i>HCA profit and loss</i>					
Revenues	[X]	[X]	[X]	[X]	[X]
Costs excluding depreciation	[X]	[X]	[X]	[X]	[X]
HCA depreciation	[X]	[X]	[X]	[X]	[X]
Profits reflecting all costs incurred	[X]	[X]	[X]	[X]	[X]
<i>HCA balance sheet</i>					
Plant & machinery/AICC	[X]	[X]	[X]	[X]	[X]
Other fixed assets	[X]	[X]	[X]	[X]	[X]
Net current assets	[X]	[X]	[X]	[X]	[X]
Provisions	[X]	[X]	[X]	[X]	[X]
Total assets	[X]	[X]	[X]	[X]	[X]
<i>ROCE</i>					
Profit/year-end capital employed (%)	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based on information provided by Lafarge.

Findings and interpretation

14. According to Table 1 the Majors taken together have been loss-making since 2008 even before factoring in the opportunity cost of capital employed. Caution should be exercised when interpreting ROCE figures calculated as the loss for the period over the capital employed. This is because a £1 loss on a £2 investment (ROCE –50 per cent) would be ranked far worse than a £100,000 loss on a £2 million investment (ROCE –5 per cent). However, the latter scenario could be regarded as a much worse performance.
15. We understand that a significant number of RMX sites were closed in response to the downturn and that the costs presented here may not reflect the full extent of losses incurred in the period of review. This is because, at least for some Majors, they have not fully included one-off rationalization costs such as asset write-downs in the figures they supplied to us. Instead it appears that they provided us with financial information whose scope is more aligned to that which they use for their own internal management reporting.
16. There is some variation across the individual firms. [One firm] was significantly loss-making at the height of the boom in 2007 and these losses have persisted albeit to a lower extent through to 2011. The other Majors only began to make losses in 2009.
17. This loss-making situation is somewhat surprising in that there has been plenty of time for the Majors to ‘right size’ their businesses in the face of the sharp downturn in demand experienced towards the end of 2008 and into 2009. All the Majors appear to have successfully right-sized their aggregates and cement businesses in response to the demand shock (ie after a dip in profitability, their ROCEs have recovered somewhat although in some cases they remain at a lower level than previously).
18. One possible explanation for the apparent losses in RMX could be that the price paid for internally⁴-supplied inputs such as cement and aggregates may not have genuinely reflected market prices.⁵ Around 75 to 85 per cent of total production⁶

⁴ All Majors have upstream aggregates operations. All Majors except Aggregate Industries have upstream cement operations.

⁵ See also discussion of internal sales/transfer charges in Appendix 6.5.

costs relate to the key raw material inputs, namely cement, other cementitious material and/or additives as well as aggregates, much of which is internally supplied. However, we have been assured that transfer charges have been undertaken either at market prices or been adjusted with the benefit of hindsight so that they reflect market prices.^{7,8}

19. If the figures presented reflect the true extent of the losses being made, then it would be in the economic interest of at least some of the Majors to further rationalize their number of RMX sites, so that the remaining portfolio of sites delivers their required rate of return. As the share of the non-Major RMX operators has grown in GB over the period of review,⁹ this suggests that it has been possible for the other RMX operators to make sustainable profits and expand operations when purchasing key inputs such as cement and aggregates at market prices.

Implications of CCA accounting for RMX profitability

20. We do not believe it would be worthwhile for us to attempt to prepare the Majors' RMX profitability on a CCA basis for the reason set out in paragraph 25 below. However, it is nevertheless worthwhile first explaining what such an exercise would involve.
21. Were we to seek to ascertain RMX profitability on a CCA basis, we would need to estimate the value of a firm's plant and machinery RMX assets on a site-by-site basis. If we start with the assumption that at 1 January 2007, the beginning of the period of review, all sites were worth replacing,¹⁰ then the appropriate valuation basis would have been on an MEA basis.
22. Many RMX sites were subsequently mothballed and/or closed during the period of review following the unexpected sharp drop in demand. In these cases the value associated with sunk¹¹ investment in the site would be written off as an impairment loss. However, there are likely to have been further sites which, while still worth operating from, would not be worth replacing. The assets located at these sites are therefore likely to have also been impaired.
23. However, all sites may not have been worth replacing in their existing location at 1 January 2007 as they may not have been situated in a location which a new entrant would have chosen to invest in at that date. In other words the firms operating at such a site would on average incur higher operating costs than a new entrant operating from a better location would have done to supply any particular job. Our understanding is that investment in new sites in recent years has focused on areas characterized by strong growth in construction activity such as London's Docklands.
24. Furthermore it is also possible that sites which were well located at 1 January 2007 became less so over the period of review as a result of the slump in demand. For example, a firm may have had two sites in the same general location at 1 January 2007 but after the slump in demand would have chosen to invest in only one of these

⁶ This includes all costs ascribed to RMX including where attributed UK and foreign parent costs but excludes the cost of capital. For this illustration it also excludes distribution and haulage costs which, in line with the Majors' normal practice, are treated as a deduction from gross revenue.

⁷ There was one exception to this picture in that [§].

⁸ See also Appendix 4.1, paragraph 151 and the second footnote to this paragraph.

⁹ Table 10.1 shows independents' share of GB RMX sales rising from 22.0 per cent in 2006 to 26.9 per cent in 2011.

¹⁰ See Appendix 4.1, paragraph 72.

¹¹ By 'sunk' we mean that the only way to realize investment in assets at that particular site would be to continue to use them for the purposes of supplying RMX from that site.

sites. Each of the Majors indicated to a greater or lesser degree that the location of its present portfolio of RMX sites was not ideal.

25. Therefore any meaningful CCA analysis of RMX profitability would need to evaluate the commercial viability of RMX sites on a site-by-site basis¹² both at 1 January 2007 and at each successive period end. As the centres of concentration of construction activity in GB have shifted over time, it should be expected that the optimal siting of RMX sites will have changed.
26. On the basis that the Majors have all been making losses on an HCA basis, and these losses do not reflect any significant levels of non-cash items such as depreciation,¹³ then they would still continue to make losses were we to prepare these results on a CCA basis. As the conclusions we draw from this profitability analysis stem from the fact that the Majors are making losses rather than profits—let alone earning economic profits—we infer that further analysis of RMX profitability would not alter these conclusions.

¹² Both on an individual stand-alone basis and for their contribution to the overall network.

¹³ CCA adjustments would alter the level of the depreciation charge as well as the value placed on the assets employed.

Vertical effects: supporting material from internal documents and parties' submissions

Advantages and disadvantages of vertical integration and efficiencies

1. Hanson told us that, subsequent to acquisition by Heidelberg, its objective had been to self-supply cement entirely and that this had been an express objective and efficiency driver of the acquisition. [REDACTED]¹
2. In one of Hanson's strategy documents it states: 'Cement growth will come through additional internal concrete volume and as such, strengthening our concrete market position is a priority'. In the same document its vertically integrated market position is described as a strength. [REDACTED]
3. Other internal documents from Hanson suggest that a lack of internal aggregate/cement supply characterizes its poor-performing RMX plants. One of Hanson's internal documents also states that vertical integration of Lafarge concrete made Lafarge RMX plants more competitive.
4. Tarmac told us that vertical integration provided it with certain efficiencies and economies, which came from scale and the ability to manage the supply chain from its own supply sources. It added that downstream operations provided an important channel to market for its aggregates. Tarmac stated it followed a strategy of self-supplying cement into its downstream businesses.²
5. Cemex told us that it tried to run its businesses separately and did not regard vertical integration as the driver of its business. It noted that it was advantageous to have a downstream business that served as a channel to market for substantial proportions of Cemex's cement and aggregates sales.³
6. [REDACTED] noted in relation to RMX: 'VI is a key driver for competitors, RMX not seen as stand-alone'. In another document [REDACTED] says that 'cement is a consolidated market defined by unbalanced vertical portfolios' while for the aggregates market it says that 'market dominated by downstream VI with fierce spot market competition'. Throughout [REDACTED] documents, vertical integration is seen as an important strategic issue. For example, one document reads: 'Capture VI potential—will identify areas where [REDACTED] relative aggregates strength can lead to increased RMX'. In another document which analyses the RMX business in the Eastern region, [REDACTED] says: 'Build upon Eastern's asset strength and VI position to enhance benefit for [REDACTED]'. One of the main regional strategic issues in the same document is to 'maximise vertically integrated returns'. In these documents [REDACTED] also refers to [REDACTED] unbalanced vertical integration.
7. Lafarge told us that it ran a business where each of the product lines was accountable for itself.⁴ We note that the 'Virtual Vertical Integration arrangement' between Hanson and Lafarge up until 2008 is another example that highlights the perceived importance of vertical integration in this industry.

¹ Second hearing with Hanson.

² Second hearing with Tarmac.

³ Second hearing with Cemex.

⁴ Second hearing with Lafarge.

8. The importance of vertical integration (or weakness resulting from lack of vertical integration) is also stressed throughout Lafarge's strategy documents. For example, in one such document Lafarge notes that its smaller vertical integration positions in RMX and asphalt relative to main competitors, and the fact that it is more reliant on external sales, are weaknesses. In the same document, it notes that nationally, over 85 per cent of RMX is vertically integrated with aggregates and that in some local markets this is close to 100 per cent. In another document Lafarge says: 'Low level of cement VI in our portfolio is due to footprint non-alignment, lack of GGBS from Lafarge and desire to maintain leverage purchases over other VI players. All major players have strong Aggregates VI into RMX and Lafarge's figure of [REDACTED]% would be typically of other UK players'. In the same document it says that 'lack of VI alignment of overall size with cement BU' is a weakness. Lafarge also describes itself as the 'odd man out as a cement player with low VI'.
9. Lafarge's rationale for the recent Tarmac/Lafarge JV highlights the importance of having a 'balanced' portfolio of products. [REDACTED]⁵
10. Aggregate Industries told us that its rationale for vertical integration was largely driven by efficiency considerations—quality of supply, offering to customers, innovation. It explained that it saw its vertical integration model as a way to differentiate from competitors, and that having RMX was as a necessary condition to be able to bid for some projects directly.⁶ Aggregate Industries also told us that its aggregates-RMX vertical integration allowed it to offer full value-added solutions to customers, and that it balanced the risk between public and private sector.⁷
11. In Aggregate Industries' strategy documents we find similar references to the advantages of vertical integration. One such document states for [REDACTED].
12. In addition, cement supply and aggregates supply are highlighted as medium- or high-risk issues for [REDACTED] RMX business in many of its risk assessment documents. In one such document in which cement supply is highlighted as high risk, [REDACTED] notes: [REDACTED]. Similarly, from the point of view of the RMX business, [REDACTED] internal document from 2010 states: [REDACTED]
13. One [REDACTED] document considers the need for accurate knowledge of RMX customer requirements when discussing potential widening of its cement product portfolio. Vertical integration is not specifically referenced, but this document appears consistent with some of [REDACTED].
14. On the other hand, there are several documents from the Majors highlighting the inefficiencies associated with vertically integrating.
15. For instance, a [REDACTED] internal document specifically states that vertical integration gives higher certainty of cement sales volume although with extra cost to supply, and that repatriated RMX business has a higher logistics cost. [REDACTED]
16. MI agreed that vertical integration played an important role in improving competitive position and customer service in terms of quality and reliability.⁸

⁵ Anglo American–Lafarge JV final report, Appendix E.

⁶ Second hearing with Aggregate Industries.

⁷ *ibid.*

⁸ Hearing with MI.

17. Titan expressed a view that loss of ‘personal touch’ with local customers was one of the disadvantages of vertical integration, and could explain the success of independent RMX producers in growing their market share over the past few years.⁹
18. Breedon Aggregates explained that the expansion of the aggregates business (either through acquisitions or by exploiting plants with rail-heads) was usually into markets where it already had RMX plants, so that the aggregate plant would already have a captive market. Similarly, Breedon Aggregates argued that it was looking at increasing its ready-mix presence and expanding it in areas where it could supply aggregates, but that it would not be attractive to open concrete plants in areas where it did not have its own supply of aggregates. Breedon Aggregates also commented on the UK business as a whole and noted that the business had become vertically integrated. It noted that there was a logic to this because of the credit risk involved with supplying to small concrete producers.
19. Brett Group told us, in relation to the cement suppliers, that vertical integration by the cement suppliers allowed it to pull levers in its own business to balance its position. It also said that following integration in the industry, there were a number of moves to increase the price of cement and increase pressure on the RMX prices. Brett Group also discussed the notion of virtual vertical integration, whereby cement suppliers seemed interested in tying up fixed outlets for their cement within an advantageous supply area. It said that these large cement installations were very volume-sensitive because of fixed costs and high capital intensity, so cement producers wanted to make sure that they had long-term stability in volume demand in that area. Another point stressed by Brett Group was that cement producers which did not have downstream capacity sufficient to utilize all their cement tended to treat Brett Group more like a customer, while integrated cement producers tended to treat it more like a competitor (unless they had more cement that they wanted to sell).
20. Balfour Beatty said that in some instances, for example when it had a business that did ground engineering, it could prefer a supplier that was much closer to the job and had more truck mixers available. In those cases it might judge that particular order on those kind of elements, but most of the time the key factor was price. Balfour Beatty also said that there were advantages of going to a vertically-integrated company when it had a major project because the volumes it required were enormous.
21. BAM Nuttall mentioned potential advantages in dealing with vertically integrated companies, including security of supply from having an in-house source of aggregates. It noted, however, in relation to [REDACTED], that it did not mind where [REDACTED] got its cement from as long as the cement met the right standards. Commenting on the extent of vertical integration in the UK RMX markets, BAM Nuttall said that vertical integration amounted to good business practice, because it enabled efficient control of the supply chain.

Foreclosure

22. The Majors’ internal documents refer to the RMX market as unstable and subject to increased competition. There are several comments in [REDACTED] internal documents relating to competitors ‘chasing volume’ and driving down prices ‘through low cement costs (increased vertical integration)’ and of the ‘Added impact [ie threat] of major competitors viewing rmx as downstream vehicle for cement/aggregates business and chasing volume rather than price’.

⁹ Hearing with Titan.

23. Pricing pressure is not consistently attributed to any one source—with some internal documents referring to independents (for example, independents in London are said to be able to source cheaper aggregates than [REDACTED]), specifically large independents (for example, Euromix in London), and the vertically integrated companies themselves.
24. There is specific reference by [REDACTED] to the possibility that pricing pressure from Cemex and Hanson might have been as a result of [REDACTED]. [REDACTED] refers to the 'aggressive VI strategy of the other major players who see RMX purely as a route to market for cement & aggregates'¹⁰ and [REDACTED].

¹⁰ [REDACTED]

Effects of policy and regulation on competition

Introduction

1. In this appendix we set out some of the evidence and supporting submissions relevant to our assessment of the impact on competition of certain aspect of policy and regulation set out in Section 11.

Planning permission and incumbency advantages

2. Two of the Majors provided views on whether the planning system provided incumbency advantages because it was easier to obtain permissions for extensions of existing aggregates sites than for the development of greenfield sites by new entrants.
3. Lafarge said that there was a natural inclination for LMPAs to resist granting applications for greenfield quarries simply because they were not popular within local communities. It noted that the national framework for aggregates planning, however, captured within the MASS,¹ forced local authorities to grant permissions (whether to greenfield sites or to quarry extensions) in order to generate sufficient supply to meet local demand,² and told us that in its view, the planning system treated applications for greenfield developments and extensions similarly.
4. Hanson told us that the guidelines set out in the NPPF that required LMPAs to assess planning applications against environmental criteria might lead to a preference for LMPAs to grant extensions for existing sites, rather than to authorize the development of new greenfield sites. Hanson noted that extending existing sites was important in terms of managing the country's finite mineral resources, where small resources might otherwise be left unworked if they were not extracted through an existing, adjoining operation, whilst that was active. It was likely that such small extensions would not be economic to open and operate as stand-alone sites and hence, if they were to be worked at all, they needed to be planned as extensions. Hanson said that this did not exclude the possibility of planning being obtained for the development of greenfield resources, as all sites would ultimately reach the end of their potential life either through reserve exhaustion or through the economic cost of operation as reserves became more distant. According to Hanson, achieving an adequate and steady supply of aggregates (one of the objectives set out in the NPPF) could only be achieved through the allocation of sites in development plans and ultimately the grant of planning permission through a range of sites, some comprising extensions and some greenfield.³ Accordingly, Hanson told us that it did not find that new sites were disadvantaged compared with existing sites in relation to obtaining planning permission and that it believed that the figures in paragraph 11.5 confirmed that a meaningful number of planning permissions were granted for new sites such that the planning system should not be regarded as a barrier to entry.

¹ The MASS was introduced in the late 1970s to manage regional imbalances between aggregates supply and demand in England and Wales.

² [Lafarge response to the issues statement.](#)

³ [Hanson response to the issues statement.](#)

Incentives to produce aggregates at sites where planning permission has been granted

5. Lafarge told us that once permission had been granted to operate a quarry, there was in most cases a strong incentive to produce aggregates from the site. It explained that this was because often the leasehold arrangements granting permission to quarry materials imposed minimum rents per year (known as 'certain rents') and that while the royalties payable would depend upon the quantity of aggregates produced once production was above the minimum level, certain rents were payable regardless of whether aggregates were quarried. In addition, according to Lafarge, the local geographic scope of aggregates markets made it inefficient to mothball sites and withdraw from local areas. It considered that it would not be commercially rational to close a site if there were no nearby sites from which it was economical to transport aggregates and serve local demand. It argued that this therefore encouraged producers to resist mothballing sites and to operate a greater number of local sites, rather than fewer sites.⁴
6. Aggregate Industries told us that [REDACTED].⁵
7. Cemex said that, 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. Cemex noted that holding undeveloped sites in a landbank and/or mothballing previously active sites did not make commercial sense.⁶
8. Tarmac told us that it had no wish to mothball sites given the levels of investment made in securing land and mineral rights, obtaining permission and acquiring the necessary plant and equipment in order to produce aggregates from the site. Furthermore, it argued that the costs of mothballing a site could be significant, including the cost of making the workforce redundant, rent, security, maintenance and other costs. It told us that many of its aggregates quarries were leasehold sites and often the lease would require the operator to pay a minimum royalty each year to the landlord, irrespective of whether the site was being worked or not. According to Tarmac, the minimum royalty could be up to 40 per cent of the typical total royalty that was expected on the site which was an onerous cost if the site was mothballed. It explained that, although such payments could often be recovered, the period of recovery was often time limited, for example to three years. Consequently, its approach was to mothball a site only as a last resort.⁷

Other comments on the planning regime

9. We have summarized below the comments we have received on whether the planning regime favours large companies over small companies.
10. The BAA told us that the Majors were better placed to ride out the lengthy planning process.

⁴ Lafarge response to the issues statement.

⁵ Aggregate Industries response to the issues statement.

⁶ Cemex response to the issues statement.

⁷ Tarmac response to the issues statement.

11. Lafarge said that it did not consider that its size or experience accorded it any special advantage in comparison with independent or local aggregates producers in navigating the planning regime.⁸
12. Aggregate Industries said that the general UK planning system was bureaucratic, slow and expensive and that significant improvements could and should be made within the current national framework, which would, among other things, benefit the minerals planning regime and reduce the cost for all applicants. Aggregate Industries added that the planning system could be navigated by any entrant with the help of planning consultants. According to Aggregate Industries, it was common practice for all suppliers to use planning consultants and there were a large number of planning consultants to whom an entrant could turn for assistance with the detailed process of a planning application. Aggregate Industries told us that planning costs varied significantly depending upon the characteristics of the site in question but did not need to constitute a prohibitively large part of the overall investment costs for establishing a quarry. Finally, Aggregate Industries noted that planning was not an insurmountable hurdle to entry and that the regime was designed to aid entry and applied equally to large and small suppliers, entrants and incumbents.⁹
13. Hanson said that in some cases smaller local operators might be treated more favourably than larger companies. Hanson told us that there was sometimes a perception among LMPAs that smaller operators were local players which would be more committed to a particular region and employing local people. Hanson also said that smaller operators might also utilize external consultants to assist in the planning process where these resources were unavailable in-house. According to Hanson, the costly nature of the planning process was not due to the actions of operators but rather a result of the design of the regime. Hanson noted that the need to comply with EU legislation was an additional cost: for example, under the Review of Old Minerals Permissions Process an aggregates producer was required to review relevant minerals planning permissions every 15 years and to propose new planning conditions that those permissions would be subject to. These may include new working and restoration schemes and such submissions may be subject to a full environmental impact assessment.¹⁰

Views on procedures of the aggregates working parties

14. We were told by Hanson that the procedures and controls maintained by the AWP's prevented the AWP's being used as a forum for disclosure or exchange of information between aggregate producers. Hanson told us the AWP's procedures and controls included the following:
 - The Secretary and Chairman of each AWP set the agenda for each meeting. The Secretary and Chairman were invariably from LMPAs. Hanson also noted that industry personnel represented a relatively small proportion of those involved in AWP's and that members were drawn from smaller producers as well as the Majors.
 - The minutes of each AWP meeting were published in the public domain.
 - The questionnaires for the annual and four-yearly survey were sent out by the LMPAs, which collated the data and responses received from the operators. Once

⁸ Lafarge response to the issues statement.

⁹ Aggregate Industries response to the issues statement.

¹⁰ Hanson response to the issues statement.

collated, the information was sent to the Secretary of the AWP. The AWP Secretary collated the returns from each LMPA in such a way that information on sales and reserves of any individual operator or for any individual quarry could not be ascertained.

- At no stage in the survey process could one operator ascertain other operators' responses because information was never sent directly from one operator to another, and the survey results were published only in accordance with the 'three company rule' whereby information from one operator was collated with that of at least two other operators, so that none of the three operators could identify the sales or reserves of either of the other two operators.
15. Hanson also told us that when it responded to the AWP surveys, it did so with a covering letter that made it clear that any information supplied was for the sole purpose of being used in the surveys and was not to be disclosed more widely.
 16. Hanson said that the degree of transparency resulting from the operation of the planning process went no further than would be expected in a planning system in which long-term investment decisions were made, and careful planning of total capacity was necessary to ensure that future demand was met.¹¹ Hanson also noted that AWP's published agendas and minutes in the public domain and took appropriate steps to ensure that no confidential information was ever exchanged.
 17. Tarmac told us that the LMPAs compiled the annual monitoring reports, and that data on minerals production and permitted reserves was provided by producers to the LMPAs on a confidential basis.¹² Tarmac also noted that figures were released by the Local Mineral Planning Secretaries on an aggregated basis, and only if a minimum number of operators contributed data, to avoid the possibility that an individual operator's figures could be deduced.
 18. Aggregate Industries told us that it did not understand why the current degree of transparency in the system was a concern. It told us that meetings of the AWP's were technical in nature and that commercially sensitive information was not disclosed. It said that minutes of the meetings were published on the DCLG website, which was difficult to reconcile with an inappropriate information exchange.¹³

Views on the aggregates levy

19. Tarmac told us that the fact that secondary and recycled aggregates were exempt from the aggregates levy was one of the reasons why secondary and recycled aggregates were cheaper to produce than primary aggregates and why the share of secondary and recycled aggregates in the overall aggregates market had grown in recent years.¹⁴
20. Lafarge said that the fact that recycled and secondary aggregates could be produced more cheaply than primary aggregates (due to the fact that they were produced from waste materials and did not attract the aggregates levy) directly constrained the pricing of primary aggregates. According to Lafarge, the aggregates levy had had the direct effect of making secondary and recycled aggregates more price competitive than primary aggregates. Lafarge also said that in its experience, recycled and secondary aggregates were often used interchangeably by customers for economic

¹¹ *ibid.*

¹² [Tarmac response to the issues statement.](#)

¹³ [Aggregate Industries response to the issues statement.](#)

¹⁴ [Tarmac response to the issues statement.](#)

reasons, with secondary and recycled aggregates often being favoured on grounds of price. Lafarge noted that it was estimated that 28 per cent of the share of supply of aggregates was accounted for by secondary and recycled aggregates, which in Lafarge's view demonstrated that they were an important source of competition in this market.¹⁵

21. Cemex told us that the exemption of secondary and recycled aggregates from the aggregates levy was under review following a negative decision by the EU General Court but for the moment the levy increased the considerable cost advantage enjoyed by secondary and recycled aggregates.¹⁶
22. Aggregate Industries told us that it was strongly of the view that aggregates taxes and credits distorted efficient production. Aggregate Industries also 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. According to Aggregate Industries, the levy constituted approximately 20 to 25 per cent of the average sales price of aggregates. It said that the levy had given producers of secondary and recycled aggregates (primarily independents) a significant cost advantage. It considered that the levy had been one of the main factors that had contributed to the increase in secondary and recycled aggregates as a proportion of total aggregate production from 9 per cent in 1980 to 28 per cent in 2010.¹⁷
23. 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.¹⁸
24. The BAA told us that it had been founded 11 years ago to oppose the imposition of the aggregates levy on behalf of the independent aggregates producers as the levy had not been strongly resisted by the Majors who accounted for between 75 and 80 per cent of the market. The BAA said that the levy exacerbated the impact on the independents of the Majors' ability to price below cost and that the Majors were able to cross-subsidize between aggregates products, between geographical areas and between cement and aggregates, whereas the independents did not have these options available. The BAA said 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.
25. The BAA told us that the aggregates levy created distortion in the aggregates market in the following ways:
 - (a) In many geographic areas the aggregates levy resulted in a price advantage in favour of secondary aggregates compared with primary aggregates and which meant that it was cost-effective to transport secondary aggregates much further by road.
 - (b) The BAA noted that china clay, slate aggregates and shale aggregates are classified as secondary aggregates. According to the BAA, these aggregates are known as secondary aggregates because they are supposed to be by-products of

¹⁵ [Lafarge response to the issues statement.](#)

¹⁶ [Cemex response to the issues statement.](#)

¹⁷ [Aggregate Industries response to the issues statement.](#)

¹⁸ [Hanson response to the updated issues statement](#), paragraph 18.8.

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. It therefore considered that the levy distorted the market.

26. Wardell Armstrong (an independent mining, minerals and engineering consultancy)¹⁹ told us that the introduction of the aggregates levy had had a direct impact on aggregates prices. Wardell Armstrong had observed, through quarry weighbridge audits on behalf of its clients, 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 aggregate products and regions as the levy was applied as a flat rate irrespective of value. Wardell Armstrong told us that an initial consequence of the introduction of the levy was an increase in low-value quarry products being used on site as restoration material, which in many cases would have been the result of a direct substitution for recycled aggregates which could be sold net of the levy. In Wardell Armstrong's view, the quantity of construction and demolition waste being recycled as aggregates would not, however, have been increased by the levy, as Landfill Tax (£72 per tonne from 1 April 2013) had already resulted in maximum recycling from either construction or restoration purposes. Wardell Armstrong also noted that consumers' choice between the use of primary, secondary and recycled aggregates was determined by end use and specification rather than price, since the aggregates used in any particular project had to be fit for purpose and comply with the Building Regulations.²⁰

Views on the EU Emissions Trading Scheme

Effects on costs

27. Hanson told us that as the carbon allowances granted to cement producers had an immediate financial value, producing clinker had an opportunity cost because for each tonne of CO₂ produced via clinker, one less tonne of CO₂ permits could be sold in the open market. Hanson noted that the extent of this opportunity cost varied with the market price of CO₂ permits and that in 2010 the opportunity cost of CO₂ was approximately [X] per cent of Hanson's total costs.²¹ To the extent that the allocations were not sufficient, companies would need to buy additional allowances and bear an additional direct cost. Hanson told us that given the decrease in the overall emissions cap, GB cement producers would need additional carbon allowances during Phase III.
28. DECC told us that, given that the amount of free carbon allowances each installation received would be based on the 10 per cent most efficient EU firms for a particular product, it was likely that 95 per cent of firms in industrial sectors, including those deemed to be at risk of carbon leakage (and therefore receiving 100 per cent of the allocation indicated by the benchmark for free) would need to reduce emissions or buy additional allowances.
29. DECC also noted that the administrative costs of the EU ETS were relatively small when spread over total emissions for a large installation. However, DECC perceived

¹⁹ Wardell Armstrong acts on behalf of many large land- and minerals-owning clients who have granted rights to extract aggregates to all five of the major aggregates companies active within the UK and many of the smaller regionally-based operators. Clients include the Crown Estate, the Church Commissioners for England, the Forestry Commission, Isle of Man Government and many private landed estates. While the company provides planning and environmental services to aggregates companies, its Mineral Estates Management Group provide services only to land and minerals owners.

²⁰ [Wardell Armstrong response to the issues statement.](#)

²¹ [Hanson response to the issues statement.](#)

the administrative cost per tonne of carbon to be relatively high for small emitters and it had pursued the option of an opt-out policy for Phase III for these installations to reduce the administrative burden.

30. Hanson noted that there was volatility in this marginal cost, with the volatility being driven by exogenous factors (for example, the severity of the winter). According to Hanson, the value of carbon allowances had varied significantly across time—which affected cement production in that it created volatility in cement margins (making the calculus of pricing and production more challenging). Hanson told us that the ability to pass this input cost increase through to price depended on the symmetry of market participants (for example, the energy efficiency of their production facilities) and the constraint from imports from outside the EU (which were unaffected by the allocations).²²
31. Cemex told us that the rationale of the EU ETS was to act as a market mechanism that allowed participants to achieve reductions in their carbon emissions where it was cost-efficient for them to do so. Cemex noted that, in its view, in the cement manufacturing sector this meant that plants that could keep their carbon emissions within their allocation would have no need to pass on any additional costs to their customers (and might even be able to pass on to customers cost savings from the sale of surplus allowances), whereas less efficient plants whose emissions exceeded their allocations, and which therefore needed to buy additional allowances, would incur additional costs that they might consider passing on to their customers. This therefore drove efficiencies in the sector and encouraged, rather than distorted, competition.²³

Effects on investment

32. Tarmac said that the EU ETS had been a contributory factor to cement plant closures, with less carbon-efficient, wet process cement plants being susceptible to closure. According to Tarmac, wet process plants required more heat and generated more carbon emissions than dry process plants. Tarmac told us that, as a result, wet process plants were more costly to operate and emitted greater levels of CO₂. Tarmac said that closure of wet process plants had allowed producers in turn to rationalize their emissions allowances to other works. Tarmac believed it unlikely that wet plant upgrades would occur in the future given the already significant level of overcapacity in domestic cement production and import facilities.²⁴
33. Lafarge told us that the EU ETS had discouraged new investment in greenfield cement works (by raising the costs of domestic production and reducing returns on capital employed) and encouraged imports.²⁵
34. Hanson said that the carbon allowances had incentivized the use of carbon-offsetting biomass fuels as an alternative to coal despite the fact that these biomass fuels were less efficient.²⁶

²² [ibid.](#)

²³ [Cemex response to the issues statement.](#)

²⁴ [Tarmac response to the issues statement.](#)

²⁵ [Lafarge response to the issues statement.](#)

²⁶ [Hanson response to the issues statement.](#)

Imports from outside the EU

35. Another implication of the potential increase in costs facing the GB domestic cement producers is the possibility of increased competition from cement plants outside the EU that are not subject to carbon emissions schemes.
36. Cemex said that manufacturers from outside the EU enjoyed increasing advantages due to carbon pricing. According to Cemex, allocations of free carbon allowances under the ETS to cement producers in Phase III were unlikely to be sufficient to cover all emissions so cement manufacturers were likely to need to buy additional carbon allowances. Cemex told us that importers of cement from outside the EU into the EU would not incur the cost of buying emissions allowances and therefore, in combination with other advantages such as cheaper electricity (Cemex considered Egypt in particular to benefit from this), importers from outside the EU had a significant competitive advantage over manufacturers within the EU who were subject to the EU ETS. Cemex noted that the European Commission was of the view that imports from outside the EU into EU markets such as GB was a realistic possibility because it had designated cement as a market which was at risk of 'carbon leakage'.²⁷
37. Lafarge also noted that cement or clinker imports from outside the EU ETS zone would have a significant cost advantage.²⁸
38. Hanson said that imports provided a strong and increasing competitive threat. It told us that, as carbon allowances also increased the opportunity cost of producing cement in the EU, plants in Morocco and elsewhere in North Africa would have a cost advantage when exporting to the UK. Hanson anticipated that imports of cement and clinker would increasingly come from countries outside the EU.²⁹

Partial cessation rule and imports

39. 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.³⁰
40. Cemex said that the EU ETS had encouraged imports into GB. It told us that in countries which had been subject to significant building booms and busts, such as the Republic of Ireland, Portugal and Spain in particular, large decreases in demand for cement had meant that most operators were operating at well below the capacity for which they had been allocated carbon allowances. It noted that if such firms' production fell below 50 per cent of their historical 2005 to 2008 baseline levels, they started automatically to lose allowances, without compensation. It told us that many such firms were now aggressively targeting Britain in order to keep production above 50 per cent of their historical levels, thus enhancing competition.³¹
41. Lafarge told us that the EU ETS Phase III was likely to increase the effectiveness of importers as a competitive source of supply. Lafarge said that those cement manufacturers that were not producing at least 50 per cent of their historical clinker production would have their carbon allowances dramatically reduced (and since the allowances were tradable, their loss would represent a significant loss of revenue). Lafarge told us that this threshold provided strong incentives for cement producers in

²⁷ [Cemex response to the issues statement.](#)

²⁸ [Lafarge response to the issues statement.](#)

²⁹ [Hanson response to the issues statement.](#)

³⁰ [Responses to the issues statement.](#)

³¹ [Cemex response to the issues statement.](#)

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 in order to meet the 50 per cent production threshold. Lafarge considered that these would be ongoing changes, not one-off changes in production volumes depending upon domestic demand conditions in each year.³²

42. Tarmac also said that the EU ETS Phase III was likely to provide even greater incentives for non-GB cement producers in, for example, Spain, the Republic of Ireland and Greece to supply cement into GB. According to Tarmac, this was due to the rule change whereby cement plants using less than 50 per cent of their allocated annual carbon allowances each year would not automatically retain their full allocation for the following year, and would lose 50 per cent of their allocation. Tarmac argued that this would mean that importers would impose an even greater competitive constraint on domestic cement producers going forward.³³
43. Hanson noted that the EU ETS was one of the factors driving Spanish and Irish cement producers to increase exports to European countries (including the UK) as they tried to maintain cement production to retain allowances despite significant declines in cement demand in their own countries.³⁴

Partial cessation rule and production allocation

44. Hanson said that the impact of the scheme had been to give it an incentive to keep all its plants open to ensure that it gained its full allocation of carbon allowances but to reduce plant utilization. It told us that this meant that marginal output was provided by the same plant as when demand was higher—there was consequently no reduction in marginal cost, and no pressure on price to fall. Indeed, according to Hanson, marginal costs might increase as inefficiencies were created when plants operated at low utilization rates. [REDACTED]
45. In a Hanson internal document [REDACTED].

New entrants' allocations

46. A new entrant will be able to receive free carbon allowances in line with incumbents, where instead of the HAL, its allocation will be based on the installation's capacity (or increase in capacity).
47. Cemex said that in each phase of the EU ETS a proportion of carbon allowances were held back for new installations which began operating during that phase (the NER). Cemex told us that these allowances were allocated on the same free basis as allowances for existing installations, so new entrants were not prejudiced in any way.³⁵
48. Tarmac said that under the current EU ETS an entrant building its own cement kiln might secure an allocation of carbon allowances to assist in meeting the requirements of the ETS new entrant scheme. However, after implementation of EU ETS Phase III, an application to secure allocations of carbon allowances would only be permissible once a new plant had been built and had started to operate.

³² Lafarge response to the issues statement.

³³ Tarmac response to the issues statement.

³⁴ Hanson response to the issues statement.

³⁵ Cemex response to the issues statement.

Views on the Carbon Reduction Commitment

49. 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. Cemex explained that participants in the CRC were required to report on their carbon emissions annually (the first such report was submitted in July 2011) and buy sufficient allowances from the Government to cover their carbon emissions in the previous year. As the scheme covers organizations whose 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.
50. Aggregate Industries told us that the CRC did distort 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).

Competition implications of planning policy regarding landbanks for aggregates

Introduction

1. In this appendix we provide further details of our assessment of the length of landbanks and the ownership of permitted reserves.

Summary

2. One of the key characteristics of the planning system for land-won primary aggregates is the use of 'landbanks'.¹ The length of a landbank in a particular area can be used as an indicator as to when new permissions for aggregates are likely to be required. The NPPF states that landbanks should be at least for seven years for sand and gravel and ten years for crushed rock. In paragraphs 6.43 to 6.47 we identify the difficulty of obtaining planning permission for a new aggregates site as a potential barrier to entry. Some parties submitted to us that obtaining planning permission was more difficult if the landbank in an area exceeded the minimum periods set out in the NPPF.
3. We considered whether (as at the date of the available information), in areas in which the landbank of sand and gravel or crushed rock exceeded the relevant minimum period, one or more of the Majors had a significant share of the permitted reserves such that there might be a cause for concern about the impact on competition in that area in the supply of aggregates.
4. We found that in over 50 per cent of counties in England the landbank for sand and gravel and crushed rock exceeded the relevant minimum periods, and one Major had over 25 per cent of the permitted reserves. We also found that in Scotland and Wales, in over 50 per cent of regions one Major had over 25 per cent of the permitted reserves.
5. The planning policy framework set out in the NPPF and by DCLG requires that landbanks bound up in a few sites should not be allowed to stifle completion in an area and that adequate or excess landbank should not be used as a reason for declining a planning application.

Regulatory framework

6. Paragraphs 2.14 to 2.28 and Appendix 2.1 describe the planning regime for the extraction of land-won primary aggregates.
7. The Government's planning policies for England are set out in the NPPF published in March 2012 while the responsibility for determining the level of aggregates extraction is decentralized to local LMPAs.
8. The NPPF sets out the ways in which LMPAs should plan for a steady and adequate supply of aggregates by maintaining appropriate landbanks, which include:

¹ 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.

- preparing an annual Local Aggregate Assessment, either individually or jointly by agreement with other LMPAs, based on a rolling average of ten years' sales data and other relevant local information, and an assessment of all supply options (including marine-dredged, secondary and recycled sources);
 - using landbanks of aggregate minerals reserves principally as an indicator of the security of aggregate minerals supply, and to indicate the additional provision that needs to be made for new aggregate extraction and alternative supplies in mineral plans;
 - making provision for the maintenance of landbanks of at least seven years for sand and gravel and at least ten years for crushed rock, whilst ensuring that the capacity of operations to supply a wide range of materials is not compromised. Longer periods may be appropriate to take account of the need to supply a range of types of aggregates, locations of permitted reserves relative to markets, and productive capacity of permitted sites;
 - ensuring that large landbanks bound up in very few sites do not stifle competition; and
 - calculating and maintaining separate landbanks for any aggregate materials of a specific type or quality which have a distinct and separate market.²
9. The NPPF also states that LMPAs should plan for a steady and adequate supply of industrial minerals. The framework includes guidance that a stock of permitted reserves should be maintained to support the level of actual and proposed investment required for new or existing plant including:
- at least 15 years for cement primary (chalk and limestone) and secondary (clay and shale) materials to maintain an existing plant; and
 - at least 25 years for brick clay, and for cement primary and secondary materials to support a new kiln.³
10. In October 2012 DCLG published *Guidance on the Managed Aggregates Supply System*⁴ to provide clarity on how the more decentralized approach to aggregate minerals planning should work whilst maintaining the existing groups which form part of the MASS, notwithstanding that planning decisions are determined at a local level by LMPAs.
11. The guidance confirmed that LMPAs should seek to maintain a landbank of at least seven years for land-won sand and gravel and ten years for crushed rock. The guidance states that while landbanks can be used as an indicator to assess when new planning permissions should be considered, each application for minerals extraction should be considered on its own merits, regardless of the length of the landbank, and that LMPAs should not automatically grant planning permission because the landbank is under seven or ten years (as appropriate) and that an adequate or excess landbank is not a reason for withholding planning permission.

² NPPF, paragraph 145: www.communities.gov.uk/documents/planningandbuilding/pdf/2116950.pdf.

³ For these purposes landbank is calculated differently from aggregate minerals landbank as defined in the footnote to paragraph 2.27(a). For cement raw materials, there should be a stock of permitted reserves (landbank) calculated for each proposed site for a cement plant. The size of the cement industry's landbank should be directly linked to the scale of capital investment envisaged at a site. See www.gov.uk/government/publications/national-planning-policy-framework-technical-guidance, paragraphs 52 & 53.

⁴ www.communities.gov.uk/documents/planningandbuilding/pdf/2238394.pdf.

Possible reasons for approving an application for planning permission in an area where there exists an adequate landbank include:

- reasonably certain forecast of significant future increases in demand;
- the location of the existing consented reserve is inappropriate for the main market area;
- the nature, type and qualities of the aggregate such as its suitability for a particular purpose within a distinct market; and
- known constraints on the availability of consented reserves that might limit output over the plan period.

12. In Scotland, the Scottish Planning Policy states that planning authorities should ensure that a landbank of permitted reserves for construction aggregates of a minimum ten years' extraction is available at all times in all market areas.⁵

Landbank definition

13. Landbank is defined in the *Guidance on the Managed Aggregates Supply System* as the sum in tonnes for all permitted reserves for which valid planning permissions are extant.⁶ This includes current non-working sites but excludes dormant and inactive sites (as set out in the Planning and Compensation Act 1991 and Environment Act 1995) for which a review is required before operation can commence or resume. The length of the landbank should be calculated using the expected provision (supply in response to demand) included in the local minerals plan, expressed on an annual basis. For the purposes of the landbank calculations, some LMPAs will calculate landbanks based on minerals plans which have used annual apportionments derived from the National and Regional Guidelines for Aggregates Provision for 2001 to 2016, and others will calculate landbanks based on minerals plans which have used updated apportionments for 2005 to 2020 published in June 2009.

Possible competition implication of landbank policy

14. In Appendix 6.2 we note that the MPA told us that there were concerns that some LMPAs had interpreted the landbank recommendations too rigidly with the effect that planning applications for aggregates sites might be refused if the landbank in an area extended beyond the minimum periods specified in Minerals Planning Statement 1 (MPS 1),⁷ and also that the BAA told us that if the landbank in an area was sufficient to meet the forecast demand it was almost impossible to obtain planning permission.
15. In support of the concerns noted above, the MPA referred to a research report by Capita Symonds Limited: *Reasons for the decline in aggregate reserves in England*.⁸ The report commented that it was generally felt by the industry that the minerals planning system had been working well and that most applications submitted in accordance with local development plans were successful. The report went on to say that whilst landbank policy was, in accordance with MPS 1, a valid reason for refusal, the industry felt that some mineral planning authorities interpreted the landbank con-

⁵ Scottish Planning Policy, paragraph 227: www.scotland.gov.uk/Publications/2010/02/03132605/8.

⁶ *Guidance on the Managed Aggregates Supply System*, paragraph 23.

⁷ The Minerals Planning Statements set out the Government's guidance to local planning authorities. MPS1 was revoked by the NPPF.

⁸ www.british-aggregates.co.uk/documentation/doc88.pdf.

cept too rigidly. The report noted that for 191 applications refused in the period 1990 to 2007, reasons for the refusal were recorded in 119 cases (61 per cent). The single most common reason for refusal, cited in 34 per cent of the cases where reasons were given, was the lack of need due to the size of the existing landbank, although various environmental reasons were given in over 60 per cent of cases. The report suggested that sometimes the landbank reason might be used as a cover for more genuine but less effective objections. The report also noted that the rate of refusals was higher in the East of England than elsewhere.⁹

16. We considered that if the concerns raised by the MPA and the BAA were valid, in areas where the existing landbanks exceeded the minimum periods and the ownership of the permitted reserves was concentrated in the hands of one party or a few parties, there might be an impact on competition as it might be difficult for another party to obtain planning permission to undertake aggregates extraction in competition with the incumbents.

Assessment

17. In order to consider whether the policies regarding landbanks might have an impact on competition in the aggregates market, we have sought to identify areas in which landbanks met or exceeded the minimum periods (on the basis that in those areas, the relevant LMPA might be less willing to grant planning permission for new aggregates sites) and whether the ownership of permitted reserves in those areas was concentrated in the hands of any of the Majors. Our approach has been to review:
 - the information on landbanks as disclosed in the annual reports of the AWP in England and Wales and the Scottish Aggregates Survey; and
 - the ownership of permitted reserves according to the data collated by BDS.

Permitted reserves and landbanks

18. The most recent information on the level of permitted reserves and landbanks in England is provided in the annual reports of the AWP.
19. The role of the AWP is described in paragraph 2.27 and Appendix 2.1.
20. Every four years, DCLG carries out a survey to provide a comprehensive and up-to-date understanding of national and regional sales, inter-regional flows, transportation, consumption and permitted reserves of primary aggregates. Information is collected through, but is not held by, the AWP. The majority of the results are reported at regional level, although some are reported at LMPA level.
21. The most recent information available at the time of our analysis on the level of permitted reserves and landbanks in Wales was provided in the South Wales AWP annual reports for 2010 and the North Wales AWP annual report for 2005. For Scotland, the most recent information available at the time of our analysis was provided in the Scottish Aggregates Survey 2005.
22. [Annex A](#) shows the permitted reserves and landbanks as reported in the sources noted above.

⁹ Paragraphs 5.46–5.49.

Ownership of permitted reserves

23. As the AWP's' annual reports do not disclose the ownership of permitted reserves, we used the data collated by BDS to identify areas in which the ownership of permitted reserves was concentrated in the hands of any of the Majors at the end of 2010. The BDS report for 2010 states that its total reserves figures for each county were close to those published in AWP reports or minerals plans, allowing for subsequent consents and mineral extracted.¹⁰
24. Annexes B and C show the proportion of sand and gravel and crushed rock permitted reserves owned by each of the Majors in each county in England, and also in Scotland and Wales, at the end of 2010, based on information provided by BDS.

Our findings

Sand and gravel

25. Table 1 (which is derived from Annexes A and B) shows the counties in England with permitted reserves of sand and gravel, and for those counties with a landbank of more than seven years, the Majors' share of the permitted reserves.

TABLE 1 Sand and gravel: landbanks and Majors' share of permitted reserves

	<i>Number of counties</i>
Landbank less than 7 years (or not disclosed)	14
Landbank greater than 7 years	
Share of permitted reserves:	
No Major had more than 25%	3
At least one Major had 25–50%	15
One Major had more than 50%	<u>11</u>
Total counties with permitted reserves of sand and gravel	43

Source: CC analysis.

Table 1 shows that in England, there were:

- (a) 43 counties in which there were permitted reserves of sand and gravel;
- (b) 15 counties where the landbank of sand and gravel was greater than seven years and at least one Major had between 25 and 50 per cent of the permitted reserves (of these, there were two counties in which the total permitted reserves were less than 1 million tonnes); and
- (c) 11 counties where the landbank of sand and gravel was greater than seven years and one Major had over 50 per cent of the permitted reserves (of these, there was one county in which the total permitted reserves were less than 1 million tonnes).

Of the counties in (b) and (c), there were 11 counties where the landbank of sand and gravel was greater than seven years and one Major, or two Majors collectively, had over 75 per cent of the permitted reserves.¹¹

¹⁰ BDS: Estimated reserves of pits and quarries in Great Britain, June 2011.

¹¹ Market shares based on BDS data; permitted reserves based on AWP reports.

26. In Scotland, BDS identified ten regions with permitted reserves of sand and gravel, of which there were three regions in which at least one Major had between 25 and 50 per cent of the permitted reserves and three regions in which one Major had over 50 per cent of the permitted reserves (of these three, there were two regions in which one Major, or two Majors collectively, had over 75 per cent of the permitted reserves). BDS's regional breakdown did not match that in the Scottish Aggregates Survey 2005 which showed that landbanks overall met the guideline in the Scottish Planning Policy in three of the four regions with material reserves of sand and gravel. The Scottish Aggregates Survey was published five years before the BDS survey.
27. In Wales, BDS identified three regions in Wales with permitted reserves of sand and gravel, of which there was one region in which one Major had between 25 and 50 per cent of the permitted reserves and one region in which one Major had over 75 per cent of the permitted reserves. BDS's regional breakdown did not match that in the North and South Wales AWP reports which showed only one region with material reserves of sand and gravel.

Crushed rock

28. Table 2 (which is derived from [Annexes A](#) and [C](#)) shows the counties in England with permitted reserves of crushed rock, and for those counties with a landbank of more than ten years, the Majors' share of the permitted reserves.

TABLE 2 **Crushed rock: landbanks and Majors' share of permitted reserves**

	<i>Number of counties</i>
Landbank less than 10 years (or not disclosed)	8
Landbank greater than 10 years	
Share of permitted reserves:	
No Major had more than 25%	6
At least one Major had 25–50%	8
One Major had more than 50%	<u>10</u>
Total counties with permitted reserves of crushed rock	32

Source: CC analysis.

Table 2 shows that in England, there were:

- (a) 32 counties in which there were permitted reserves of crushed rock;
- (b) eight counties where the landbank of crushed rock was greater than ten years and at least one Major had between 25 and 50 per cent of the permitted reserves; and
- (c) ten counties where the landbank of crushed rock was greater than ten years and one Major had more than 50 per cent of the permitted reserves (of these, there was one county in which the total permitted reserves were less than 1 million tonnes).

Of the counties in (b) and (c), there were seven counties where the landbank of crushed rock was greater than ten years and one Major, or two Majors collectively, had over 75 per cent of the permitted reserves.¹²

29. In Scotland, BDS identified ten regions in Scotland with permitted reserves of crushed rock, of which there were four regions in which at least one Major had between 25 and 50 per cent of the permitted reserves and three regions in which one Major had over 50 per cent of the permitted reserves (and of these three, there were two regions in which one Major, or two majors collectively, had over 75 per cent of the permitted reserves). BDS's regional breakdown did not match that in the Scottish Aggregates Survey 2005 which showed that landbanks exceeded the guideline in the Scottish Planning Policy in all regions.
30. BDS identified eight regions in Wales with permitted reserves of crushed rock, of which there were three regions in which at least one Major had between 25 and 50 per cent of the permitted reserves and five regions in which one Major had over 50 per cent of the permitted reserves. There were four regions in which two Majors collectively had over 75 per cent of the permitted reserves. BDS's regional breakdown did not match that in the North and South Wales AWP annual reports which showed that landbanks exceeded the guideline in all regions.

Comparison of the Majors' reserves and production

31. We 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, and found them to be similar, as shown in Table 3.

TABLE 3 The Majors' share of reserves and output in GB

	<i>Aggregate Industries</i>	<i>Cemex</i>	<i>Hanson</i>	<i>Lafarge</i>	<i>Tarmac</i>
					<i>per cent</i>
<i>Sand and gravel</i>					
Share of permitted reserves (2010)	11	12	18	8	19
Share of production (2011)	11	14	12	10	19
<i>Crushed rock</i>					
Share of permitted reserves (2010)	25	11	11	8	24
Share of production (2011)	22	9	15	11	21

Source: BDS aggregates database; BDS estimated market shares of pits, quarries and marine wharves (2011).

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 for all the Majors and for crushed rock the correlation coefficients were over 0.6 for all the Majors.

Conclusions

32. In over 50 per cent of counties in England where there were permitted reserves of sand and gravel or crushed rock, the combination of conditions existed which might have given cause for concern about the extent of competition: ie the landbank was more than the minimum period set out in the NPPF, with the implication that obtaining a new planning permission for extraction of aggregates might be difficult, and one Major (or two Majors collectively) had at least 25 per cent of the permitted reserves.

¹² Market shares based on BDS data; permitted reserves based on AWP reports.

33. In the majority of the regions in Scotland and Wales, one of the Majors had at least 25 per cent of the permitted reserves.
34. We found that each of the Majors' share of permitted reserves in GB is similar to its share of production and each Major's local stock of permitted reserves is positively correlated with its local share of production, which indicated to us that the Majors are not holding significant inactive sites of permitted reserves in the landbanks to prevent entry (whereas 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).
35. We found that historically most planning applications were successful and considered that, regarding the applications which were refused, the evidence was not conclusive on the significance of landbank policy as a reason for refusal.
36. In England, planning policy guidelines set out in the NPPF, which requires LMPAs not to allow landbanks that are bound up in a few large sites to stifle competition, and the DCLG Guidance on the Managed Aggregates Supply System, which states that each planning application should be considered on its own merits and that an adequate or excess landbank is not a reason for withholding planning permission, go some way mitigating the concern that landbank policy might have an adverse impact on competition.

Permitted reserves and landbanks

Region	Sub-region	Reserves		Landbank	
		Sand and gravel Million tonnes	Crushed rock Million tonnes	Sand and gravel Years	Crushed rock Years
<i>England (2009 aggregates survey results)</i>					
East of England	Bedfordshire and Luton	22.9	0.0	12.4	-
	Cambridgeshire and Peterborough	46.2	1.4	16.0	7.0
	Essex, Thurrock and Southend	37.4	0.0	8.4	-
	Hertfordshire	10.8	0.0	7.8	-
	Norfolk	17.0	1.8	6.6	5.9
	Suffolk	<u>13.6</u>	<u>0.0</u>	<u>8.4</u>	
	Total	147.9	3.2	10.0	6.4
East Midlands	Derbyshire	9.9	810.1	6.6	92.7
	Peak District National Park	0.0	92.5	-	22.8
	Leicestershire/Rutland	12.8	342.2	8.5	20.2
	Lincolnshire	22.8	41.3	7.0	37.5
	Northamptonshire	6.2	14.0	8.0	46.8
	Nottinghamshire	<u>28.9</u>	<u>3.4</u>	<u>7.6</u>	<u>33.5</u>
Total	80.6	1303.5	7.4	41.8	
North-East	Durham	2.1	136.3	5.5	28.8
	Northumberland	8.6	78.4	12.3	34.5
	Tees Valley and Tyne & Wear	<u>Not disclosed</u>	<u>2.2</u>	<u>Not disclosed</u>	<u>5.3</u>
	Total	13.7	217.0	10.9	29.2
North-West	Cheshire	12.8	4.4	6.5	34.0
	Cumbria	14.0	169.0	19.9	41.2
	Greater Manchester	6.1	17.2	23.5	10.4
	Lancashire	<u>9.0</u>	<u>136.8</u>	<u>18.0</u>	<u>29.7</u>
	Total	41.8	327.4	12.2	31.2
South-East of England	Berkshire Utilities	10.0	0.0	7.5	-
	Buckinghamshire	11.6	0.0	11.0	-
	East Sussex	<u>Not disclosed</u>	<u>0.0</u>	<u>>7</u>	<u>-</u>
	Hampshire	6.8	0.0	3.3	-
	Isle of Wight	1.4	<u>Not disclosed</u>	14.0	<u>Not disclosed</u>
	Kent	16.8	<u>Not disclosed</u>	10.3	<u>Not disclosed</u>
	Medway	<u>Not disclosed</u>	<u>0.0</u>	<u><7</u>	<u>-</u>
	Milton Keynes	<u>Not disclosed</u>	<u>0.0</u>	<u><7</u>	<u>-</u>
	Oxfordshire	9.1	12.6	4.3	25.2
	Surrey	10.9	<u>Not disclosed</u>	8.6	<u>Not disclosed</u>
	West Sussex	<u>5.5</u>	<u>Not disclosed</u>	<u>5.3</u>	<u>Not disclosed</u>
	Total	79.0	48.0	7.1	36.9
	South-West	Avon	0.0	192.3	-
Cornwall		0.0	115.2	-	68.6
Devon		8.7	188.1	9.4	58.8
Dorset		0.0	335.9	-	25.0
Gloucestershire		7.1	27.1	7.1	12.0
Somerset		5.6	0.0	4.0	-
Wiltshire		<u>19.1</u>	<u>8.5</u>	<u>9.7</u>	<u>28.2</u>
Total		40.5	867.0	7.6	33.6
West Midlands		Herefordshire	5.2	15.0	18.2
	Worcestershire	3.7	<u>Not disclosed</u>	4.2	<u>Not disclosed</u>
	Shropshire	14.4	116.0	17.6	39.3
	Staffordshire	79.4	160.5	12.0	115.0
	Warwickshire	4.0	29.1	3.8	33.1
	West Midlands	<u>5.1</u>	<u>0.0</u>	<u>10.0</u>	<u>-</u>
	Total	111.7	320.6	11.0	55.2
Yorkshire and Humber	North Yorkshire	18.4	103.9	7.4	28.3
	Yorkshire Dales National Park	0.0	106.2	-	28.7
	South Yorkshire	5.4	63.4	9.7	27.5
	West Yorkshire	0.0	27.1	-	28.3
	East Riding/North Lincolnshire	<u>10.8</u>	<u>1.7</u>	<u>10.1</u>	<u>6.2</u>
	Total	34.6	302.4	8.4	27.7

Region	Sub-region	Reserves		Landbank	
		Sand and gravel Million tonnes	Crushed rock Million tonnes	Sand and gravel Years	Crushed rock Years
London	London	2.0	0.0	2.0	-
<i>Scotland (2005 survey results)</i>					
	East Central	3.4	43.3	9.0	17.0
	Highland	19.6	481.6	40.0	81.0
	North-East	24.8	622.6	27.0	471.0
	Orkney	0.8	4.0	358.0	75.0
	Shetland	0.0	5.4	0.0	31.0
	South	3.5	36.0	6.0	30.0
	Tayside and Fife	15.9	27.9	9.0	11.0
	West Central	54.1	143.4	16.0	18.0
	Western Isles	0.6	3.5	21.0	20.0
		122.8	1367.7		
<i>North Wales (2005 survey results)</i>					
	Anglesey	0.0	17.7	-	42.0
	Conwy	0.0	69.9	-	50.0
	Denbighshire	14.6	25.1	15.0	25.0
	Flintshire		82.7		25.0
	Gwynedd	1.0	5.4	5.0	27.0
		15.6	200.8		
<i>South Wales (2010 survey results)</i>					
	Dyfed and West Glamorgan	1.7	120.6	-	50.2
	Gwent, Mid Glamorgan, South Glamorgan	Not disclosed	219.3	-	63.7
	Powys	0.0	170.7	-	55.7
			510.7		

Source: England AWP annual reports 2009, Scotland Aggregates Survey 2005, North Wales AWP annual report 2005, South Wales AWP annual report 2010.

Sand and gravel: percentage of permitted reserves owned by the Majors, 2010

Region	Sub-region	Aggregate Industries	Cemex	Hanson	Lafarge	Tarmac	per cent
							Independent
East	Bedfordshire	[X]	[X]	[X]	[X]	[X]	[X]
	Cambridgeshire	[X]	[X]	[X]	[X]	[X]	[X]
	Essex	[X]	[X]	[X]	[X]	[X]	[X]
	Hertfordshire	[X]	[X]	[X]	[X]	[X]	[X]
	Norfolk	[X]	[X]	[X]	[X]	[X]	[X]
	Suffolk	[X]	[X]	[X]	[X]	[X]	[X]
East Midlands	Derbyshire	[X]	[X]	[X]	[X]	[X]	[X]
	Leicestershire	[X]	[X]	[X]	[X]	[X]	[X]
	Lincolnshire	[X]	[X]	[X]	[X]	[X]	[X]
	Northamptonshire	[X]	[X]	[X]	[X]	[X]	[X]
	Nottinghamshire	[X]	[X]	[X]	[X]	[X]	[X]
North-East	Cleveland	[X]	[X]	[X]	[X]	[X]	[X]
	Durham	[X]	[X]	[X]	[X]	[X]	[X]
	Northumberland	[X]	[X]	[X]	[X]	[X]	[X]
	Tyne & Wear	[X]	[X]	[X]	[X]	[X]	[X]
North-West	Cheshire	[X]	[X]	[X]	[X]	[X]	[X]
	Cumbria	[X]	[X]	[X]	[X]	[X]	[X]
	Lancashire	[X]	[X]	[X]	[X]	[X]	[X]
	Manchester	[X]	[X]	[X]	[X]	[X]	[X]
	Merseyside	[X]	[X]	[X]	[X]	[X]	[X]
South-East	Berkshire	[X]	[X]	[X]	[X]	[X]	[X]
	Buckinghamshire	[X]	[X]	[X]	[X]	[X]	[X]
	Hampshire	[X]	[X]	[X]	[X]	[X]	[X]
	Isle of Wight	[X]	[X]	[X]	[X]	[X]	[X]
	Kent	[X]	[X]	[X]	[X]	[X]	[X]
	London	[X]	[X]	[X]	[X]	[X]	[X]
	Oxfordshire	[X]	[X]	[X]	[X]	[X]	[X]
	Surrey	[X]	[X]	[X]	[X]	[X]	[X]
West Sussex	[X]	[X]	[X]	[X]	[X]	[X]	
South-West	Cornwall	[X]	[X]	[X]	[X]	[X]	[X]
	Devon	[X]	[X]	[X]	[X]	[X]	[X]
	Dorset	[X]	[X]	[X]	[X]	[X]	[X]
	Gloucestershire	[X]	[X]	[X]	[X]	[X]	[X]
	Wiltshire	[X]	[X]	[X]	[X]	[X]	[X]
West Midlands	Hereford & Worcester	[X]	[X]	[X]	[X]	[X]	[X]
	Shropshire	[X]	[X]	[X]	[X]	[X]	[X]
	Staffordshire	[X]	[X]	[X]	[X]	[X]	[X]
	Warwickshire	[X]	[X]	[X]	[X]	[X]	[X]
	West Midlands	[X]	[X]	[X]	[X]	[X]	[X]
Yorkshire	Humberside	[X]	[X]	[X]	[X]	[X]	[X]
	North Yorkshire	[X]	[X]	[X]	[X]	[X]	[X]
	South Yorkshire	[X]	[X]	[X]	[X]	[X]	[X]
	West Yorkshire	[X]	[X]	[X]	[X]	[X]	[X]
Scotland	Borders	[X]	[X]	[X]	[X]	[X]	[X]
	Central	[X]	[X]	[X]	[X]	[X]	[X]
	Dumfries & Galloway	[X]	[X]	[X]	[X]	[X]	[X]
	Fife	[X]	[X]	[X]	[X]	[X]	[X]
	Grampian	[X]	[X]	[X]	[X]	[X]	[X]
	Highland	[X]	[X]	[X]	[X]	[X]	[X]
	Islands	[X]	[X]	[X]	[X]	[X]	[X]
	Lothian	[X]	[X]	[X]	[X]	[X]	[X]
	Strathclyde	[X]	[X]	[X]	[X]	[X]	[X]
Tayside	[X]	[X]	[X]	[X]	[X]	[X]	

Region	Sub-region	Aggregate Industries	Cemex	Hanson	Lafarge	Tarmac	per cent
							Independent
Wales	Clwyd	[X]	[X]	[X]	[X]	[X]	[X]
	Dyfed	[X]	[X]	[X]	[X]	[X]	[X]
	Gwynedd	[X]	[X]	[X]	[X]	[X]	[X]
		[X]	[X]	[X]	[X]	[X]	[X]

Source: BDS, CC analysis.

Crushed rock: percentage of permitted reserves owned by the Majors 2010

Region	Sub-region	Aggregate Industries	Cemex	Hanson	Lafarge	Tarmac	per cent
							Independent
East	Cambridgeshire	[X]	[X]	[X]	[X]	[X]	[X]
	Norfolk	[X]	[X]	[X]	[X]	[X]	[X]
East Midlands	Derbyshire	[X]	[X]	[X]	[X]	[X]	[X]
	Leicestershire	[X]	[X]	[X]	[X]	[X]	[X]
	Lincolnshire	[X]	[X]	[X]	[X]	[X]	[X]
	Northamptonshire	[X]	[X]	[X]	[X]	[X]	[X]
	Nottinghamshire	[X]	[X]	[X]	[X]	[X]	[X]
North-East	Cleveland	[X]	[X]	[X]	[X]	[X]	[X]
	Durham	[X]	[X]	[X]	[X]	[X]	[X]
	Northumberland	[X]	[X]	[X]	[X]	[X]	[X]
	Tyne & Wear	[X]	[X]	[X]	[X]	[X]	[X]
North-West	Cheshire	[X]	[X]	[X]	[X]	[X]	[X]
	Cumbria	[X]	[X]	[X]	[X]	[X]	[X]
	Lancashire	[X]	[X]	[X]	[X]	[X]	[X]
	Manchester	[X]	[X]	[X]	[X]	[X]	[X]
	Merseyside	[X]	[X]	[X]	[X]	[X]	[X]
South-East	Kent	[X]	[X]	[X]	[X]	[X]	[X]
	Oxfordshire	[X]	[X]	[X]	[X]	[X]	[X]
South-West	Avon	[X]	[X]	[X]	[X]	[X]	[X]
	Cornwall	[X]	[X]	[X]	[X]	[X]	[X]
	Devon	[X]	[X]	[X]	[X]	[X]	[X]
	Dorset	[X]	[X]	[X]	[X]	[X]	[X]
	Gloucestershire	[X]	[X]	[X]	[X]	[X]	[X]
	Somerset	[X]	[X]	[X]	[X]	[X]	[X]
West Midlands	Hereford & Worcester	[X]	[X]	[X]	[X]	[X]	[X]
	Herefordshire	[X]	[X]	[X]	[X]	[X]	[X]
	Shropshire	[X]	[X]	[X]	[X]	[X]	[X]
	Staffordshire	[X]	[X]	[X]	[X]	[X]	[X]
	Warwickshire	[X]	[X]	[X]	[X]	[X]	[X]
Yorkshire	North Yorkshire	[X]	[X]	[X]	[X]	[X]	[X]
	South Yorkshire	[X]	[X]	[X]	[X]	[X]	[X]
	West Yorkshire	[X]	[X]	[X]	[X]	[X]	[X]
Scotland	Borders	[X]	[X]	[X]	[X]	[X]	[X]
	Central	[X]	[X]	[X]	[X]	[X]	[X]
	Dumfries & Galloway	[X]	[X]	[X]	[X]	[X]	[X]
	Fife	[X]	[X]	[X]	[X]	[X]	[X]
	Grampian	[X]	[X]	[X]	[X]	[X]	[X]
	Highland	[X]	[X]	[X]	[X]	[X]	[X]
	Islands	[X]	[X]	[X]	[X]	[X]	[X]
	Lothian	[X]	[X]	[X]	[X]	[X]	[X]
	Strathclyde	[X]	[X]	[X]	[X]	[X]	[X]
Tayside	[X]	[X]	[X]	[X]	[X]	[X]	
Wales	Clwyd	[X]	[X]	[X]	[X]	[X]	[X]
	Dyfed	[X]	[X]	[X]	[X]	[X]	[X]
	Gwent	[X]	[X]	[X]	[X]	[X]	[X]
	Gwynedd	[X]	[X]	[X]	[X]	[X]	[X]
	Mid Glamorgan	[X]	[X]	[X]	[X]	[X]	[X]
	Powys	[X]	[X]	[X]	[X]	[X]	[X]
	South Glamorgan	[X]	[X]	[X]	[X]	[X]	[X]
West Glamorgan	[X]	[X]	[X]	[X]	[X]	[X]	

Source: BDS, CC analysis.

Summary of views on the Remedies Notice

Overview of remedy options being explored by the CC

1. The CC considered the following remedy options to address the AEC it provisionally found in the GB markets for bulk and bagged cement through coordination.

Divestiture remedies

- C1. *Market structure and concentration: divestiture of cement production capacity by one or more of the Top 3 cement producers.*
- C2. *Vertical integration: divestiture of RMX plants by one or more of the Top 3 cement producers.*

Measures to enhance countervailing power of cement purchasers

- C3. *Buyer-side issues: the creation of a cement buying group or groups.*

Restrictions on supplier conduct that have the effect of facilitating coordination

- C4. *Price announcement behaviour: prohibition on GB cement producers sending generalized cement price announcement letters to their customers.*

Restriction on publication of information by Government and other bodies

- C5. *Transparency of sales and production shares: restrictions on the disclosure of cement market data by the UK Government and by GB cement producers to private sector organizations.*
- C6. *Transparency of sales and production shares: recommendations to the UK Government/European Commission on the publication of GB cement producers' verified emissions data under the EU ETS.*

2. The CC also considered the following remedy option to address the AEC it provisionally found in the GB markets for bulk and bagged cement in relation to the production of GGBS and its primary input, GBS.

Divestiture remedy

- C7. *GGBS supply: structural measures to address the AEC in relation to GGBS/GBS production in GB.*
3. In addition, the following remedy options were put to the CC in responses received from the parties.
- Z1. *In respect of cross-sales, a mechanism for mandatory competitive tendering for the external supply of cement for RMX requirements (to address concerns arising from vertical integration facilitating coordination).*

- Z2. *'Fire walls' or 'information barriers' designed to limit within vertically integrated organizations the transfer of price information between cement and RMX divisions.*
- Z3. *Divestiture of a stand-alone grinding station.*

Responses from parties

4. The CC received responses to its Remedies Notice from 27 individual parties and held a number of subsequent response hearings. In respect of the proposed structural remedies, the Top 3 cement producers were the only parties against the cement plant divestiture remedy (C1). Of the other parties who gave a view on that particular remedy, seven were in favour of it and two were neutral. Similarly, the Top 3 cement producers plus Aggregate Industries were against the RMX plant divestiture remedy (C2). Of the other parties who gave a view on that particular remedy, six were in favour and two were neutral. In respect of the GGBS/GBS divestiture remedy (C7), eight parties were in favour, two against and four were neutral.
5. In respect of the proposed behavioural remedies, nine parties were against the cement buying group remedy (C3), three were in favour and one was neutral. In respect of the prohibition on generalized price announcement letters remedy (C4), seven parties were in favour, one against and two were neutral. In respect of the restriction of cement market data remedy (C5), nine were in favour, one was against and two were neutral. In respect of the publication of EU ETS data remedy (C6), two were in favour, three were against and four were neutral.
6. In respect of the remedy options put to the CC, three parties were for the mandatory competitive tendering remedy (Z1), four were against and three were neutral. In respect of the information barriers remedy (Z2), only one was in favour and six were against. In respect of the stand-alone grinding station remedy (Z3), four parties were in favour, five were against and one was neutral.

Summary of views

Lafarge Tarmac

7. Lafarge Tarmac submitted a single response to both the CC's Remedies Notice and provisional findings. It also attended a response hearing on 3 July 2013.

C1

8. Lafarge Tarmac considered that a cement (or RMX) divestment would not remedy the AEC identified by the CC and that less intrusive remedies would be effective. It also considered that a cement or RMX divestment would be wholly disproportionate.¹
9. Lafarge Tarmac stated that a divestment would be ineffective on the basis that it was arbitrary for the CC to assume that having five GB cement producers would prevent coordination.² Lafarge Tarmac was not entirely clear why the CC considered that a divestiture of a plant or plants would be effective to remedy the alleged AEC. It stated that it was not enough 'to consider that merely because a particular remedy would serve to reduce a particular measure of industry concentration' it would make it

¹ [Lafarge Tarmac response to the Remedies Notice](#), paragraph 192.

² *ibid*, paragraph 192(a).

effective and that 'such a mechanistic approach would be profoundly misguided'.³ If the divestment remedy was driven by the desire to address the leadership position of Lafarge Tarmac as opposed to market concentration, 'neither of the CC's allegations of Lafarge Tarmac's leadership require[d] a structural remedy'.⁴

10. Lafarge Tarmac asserted that the CC only needed to remedy one of the three cumulative conditions for coordination (monitoring the terms of coordination, internal sustainability and external sustainability) and that the behavioural remedies proposed by the CC would address each of those rendering the divestment remedy options unnecessary.⁵
11. Lafarge Tarmac considered that the CC's profitability assessment and estimate of consumer harm was 'entirely misconceived' and that 'the evidence does not indicate excessive profits or supra normal pricing'.⁶ On that basis, it would not be proportionate for the CC to require 'such substantial and costly remedies given the absence of any evidence of customer harm'.⁷
12. Lafarge Tarmac considered that a divestment would be disproportionate as the CC had failed to satisfy the criteria set out in the CAT's judgment in *Tesco v Competition Commission* and *BAA v Competition Commission*.⁸ Lafarge Tarmac noted that the BAA case was the first time in recent history that the CC had imposed a divestiture remedy and considered that the scenario in the BAA case was 'quite incomparable to the present case'.⁹
13. Lafarge Tarmac considered that the divestment remedy option was inconsistent with the structural remedy required in the recent merger review. It pointed out that in the merger review the CC required the JV to divest RMX sites in order to 'increase the JV's exposure to the external market' to ensure that the level was similar to the pre-merger level of Lafarge. Yet, 'according to the CC's logic in the current MIR, the CC team assessing the JV should *not* have required a substantial RMX divestment because the more that the JV had internal sales, the less effective any punishment of the JV would be, as it could rely more on its internal sales in the event of a price war. In turn, if it was harder to punish the JV from deviating and more attractive for the JV to deviate, the coordination would become less stable'.¹⁰ On this basis, Lafarge Tarmac considered that the CC had no coherent basis for requiring a structural remedy from it in relation to cement plants (or RMX sites).¹¹
14. Lafarge Tarmac also considered that a divestment remedy would result in consumer harm. This was because the current industry structure enabled significant economies of scope and scale which, if altered by way of divestiture, would lead to increased costs of production and disruption from forced sales, which was likely to well exceed any speculative benefits that may accrue in the form of increased competition.¹² Lafarge Tarmac stated that it currently operated at full capacity at its operations at Aberthaw, Tunstead and Cauldon and a divestment would undermine its operational efficiency.¹³ It also considered that an additional player with only one cement plant would only be able to produce a limited number of products and it would not gain

³ *ibid*, paragraph 221.

⁴ *ibid*, paragraph 222.

⁵ *ibid*, paragraph 192(b).

⁶ *ibid*, paragraph 241.

⁷ *ibid*, paragraph 249.

⁸ *ibid*, paragraph 192(c).

⁹ *ibid*, paragraph 220.

¹⁰ *ibid*, paragraph 226.

¹¹ *ibid*, paragraph 227.

¹² *ibid*, paragraph 219.

¹³ *ibid*, paragraph 237.

efficiencies.¹⁴ It followed that any new competitor would find it near impossible to increase output and therefore reduce prices.¹⁵

15. Lafarge Tarmac considered that the CC's proportionality requirements must be read in light of the stringent requirements imposed by Article 1 of the First Protocol to the European Convention on Human Rights and that any interference with property rights required particularly cogent justification and close scrutiny.¹⁶ It was concerned that the conditions of a forced sale rendered it highly unlikely that a seller would obtain full or fair value for divested assets and considered that there would likely be 'very few, if any, purchasers for such an asset or assets'.¹⁷ It considered that the market had changed following the entry of HCM and the significant growth of importers, and therefore any potential investor would be more likely to invest in a developing market rather than in GB.¹⁸ It contended that:

any forced divestiture would (in order to meet the requirements of proportionality) have to be structured by the CC in such a way so as to ensure that the following essential conditions were met: (a) there were safeguards to ensure that the purchaser was obliged actually to operate the cement plant as such and not to convert it to another use; and (b) the sale was not at a significant undervalue to its true value.¹⁹

16. Lafarge Tarmac stated that 'the CC, in evaluating the necessity and proportionality of prospective remedies, must seek to extrapolate to the likely state of the market at such time in the future when such remedies may be expected to take effect' and that in the case of a divestiture, this could not realistically take effect before 2016.²⁰ Furthermore:

the CC must first seek fairly to assess whether the significantly enhanced fourth GB producer (HCM) offers (or will in the medium term be likely to offer) a sufficiently enhanced competitive constraint, whether alone or in combination with the strengthening importers (in particular from Ireland) to substantially remedy the alleged AEC.²¹

Lafarge Tarmac considered that the critical question was why five producers would be so much better than four, especially when HCM was 'competing hard already, with additional material scope for greater competition from CRH'.²²

17. Lafarge Tarmac considered that a divestiture of a cement plant would not necessarily require a rail link and one without could be brought a lower cost. However, a plant without a rail link would have a more limited network with less opportunity to reach customers.²³
18. Lafarge Tarmac considered that a cement plant divestiture did not also require a RMX divestiture, as there was no shortage of available RMX customers to be serviced and there were a number of RMX producers with no cement such as Breedon Aggregates. Lafarge Tarmac was concerned by the level of vertical integration that

¹⁴ [Lafarge Tarmac response hearing summary](#), paragraph 21.

¹⁵ *ibid*, paragraph 11.

¹⁶ [Lafarge Tarmac response to the Remedies Notice](#), paragraph 217.

¹⁷ *ibid*, paragraph 234.

¹⁸ *ibid*, paragraph 23.

¹⁹ *ibid*, paragraph 236.

²⁰ *ibid*, paragraph 229.

²¹ *ibid*, paragraph 230.

²² *ibid*, paragraph 231.

²³ [Lafarge Tarmac response hearing summary](#), paragraph 20.

had been given to HCM as a result of the JV. It believed this to be in the region of 50 per cent where as it considered a level of 15 to 20 per cent appropriate.²⁴

C2

19. As noted above, Lafarge Tarmac considered that a cement or RMX divestment would be wholly disproportionate and would not in any event remedy the AEC identified by the CC.
20. In respect of the addressable market, Lafarge Tarmac considered that there was no evidence to suggest that importers had found it difficult to enter and expand their supply to the independent sector and it estimated that importer share in that sector had increased from 13 per cent in 2007 to 18 per cent in 2010. It noted that six new import terminals had opened since 2007 with CRH well set to expand further.²⁵ The fact that importers increased market share by what Lafarge Tarmac had estimated to be approximately 6 per cent suggested that there was no basis for RMX divestments.²⁶
21. Lafarge Tarmac believed that the growth of importers over the past five years was linked to the growth of independent RMX businesses.²⁷ With low barriers to entry, smaller operators could set up a local business. However, such small operations could not necessarily buy a large number of RMX plants or have the expertise and nationwide coverage to be able to effectively compete.²⁸
22. Lafarge Tarmac noted that the CC had identified that cement prices were individually negotiated on a customer-by-customer basis. Therefore, it considered that the enhanced power of any given buyer did not benefit weaker buyers. Accordingly, it considered that a divestment of RMX assets would not be effective in improving the negotiating leverage of smaller customers.²⁹ Lafarge Tarmac stated that it was incumbent on the CC to explain why the creation of a cement buyer group would not prove to be a better solution.³⁰
23. Lafarge Tarmac noted the CC's view that cross-sales increased price transparency via both price announcement letters and agreed prices but considered that the CC had not demonstrated that this concern warranted a structural remedy.³¹ It considered that a prohibition on sending price announcement letters would be sufficient to address this concern.³² Lafarge Tarmac also rejected the view that Lafarge sales to Cemex and Hanson increased transparency or acted as a signal.³³ In addition, Lafarge Tarmac noted the decrease in cross-sales in recent years as a result of significant changes in the market which rendered a structural remedy unnecessary.³⁴ It asserted that 'the simplest way to reduce the scope for cross-sales is entirely to prohibit them' whereby 'the alleged problem [was] instantly removed'. It considered that the divestment of RMX sites would not prevent cross-sales from taking place and would not therefore be an effective remedy.³⁵

²⁴ *ibid*, paragraph 18.

²⁵ [Lafarge Tarmac response to the Remedies Notice](#), paragraph 259.

²⁶ *ibid*, paragraph 260.

²⁷ [Lafarge Tarmac response hearing summary](#), paragraph 26.

²⁸ *ibid*, paragraph 27.

²⁹ [Lafarge Tarmac response to the Remedies Notice](#), paragraph 261.

³⁰ *ibid*, paragraph, 262.

³¹ *ibid*, paragraph 263.

³² *ibid*, paragraph 264.

³³ *ibid*, paragraph 266.

³⁴ *ibid*, paragraph 267.

³⁵ *ibid*, paragraph 269.

24. Lafarge Tarmac noted the CC's view that if the Top 3 cement producers had a lower degree of internal cement, each might compete harder for external customers. However, it considered that it 'already had by far the lowest share of internal demand for cement' which indicated that further RMX divestments would not be appropriate or proportionate. Lafarge Tarmac considered that the CC was taking 'an entirely contradictory approach in the [market investigation] to that taken in the Merger Review by asserting that Lafarge's high exposure to the external market was a feature that made coordination more likely'.³⁶

C3

25. In its response to the CC's Remedies Notice, Lafarge Tarmac considered that the organization of any cement buying group would be a matter for comment by its potential members and would not therefore propose to comment further.³⁷ However, during its response hearing it stated that it did not believe that the establishment of a cement buying group would be an effective remedy. It had striven to develop its individual customer relationships and did not wish to be a commodity-driven company. It considered that larger cement purchasers would not willingly become part of a cement buying group as this would mean that they could not differentiate themselves from their competitors by exercising their procurement expertise. Furthermore, most customers believed they could gain competitively by negotiating themselves rather than on par with their competitors. Overall, Lafarge Tarmac believed that cement buying groups would not necessarily benefit the customer and noted that there was currently nothing preventing cement buying groups from being set up.³⁸

C4

26. Lafarge Tarmac contended that price announcement letters were 'not an effective directional signal of how prices will move', that they did 'not provide a meaningful indicator for how any individual customer price would change', they had 'no commitment power' and were 'unlikely to soften customer resistance to price changes'.³⁹ While Lafarge Tarmac contended that price announcement letters 'do not harm competition' it noted 'that the most straightforward remedy to a concern about such letters [was] to prevent them from being sent'. It considered that a structural remedy was unnecessary and would not prevent such letters from being sent.⁴⁰ Instead, it suggested that behavioural remedies, to include a prohibition of generalized price announcement letters, 'would be effective in addressing all of the concerns identified in the CC's provisional findings'.⁴¹
27. During the response hearing, Lafarge Tarmac stated that it was ready to stop sending generic price announcement letters. In future, price announcement letters would be individualized for each customer based on the products that customers purchased and would specify a proposed price per tonne rather than a general price increase. Lafarge Tarmac explained that price announcement letters were still in demand from customers who used them for budgetary and negotiating purposes. Lafarge Tarmac considered that individualized price announcement letters should apply to all cementitious products. While this remedy would result in some additional administration

³⁶ *ibid*, paragraph 270.

³⁷ *ibid*, paragraph 215.

³⁸ [Lafarge Tarmac response hearing summary](#), paragraph 37.

³⁹ [Lafarge Tarmac response to the Remedies Notice](#), paragraph 104.

⁴⁰ *ibid*, paragraph 228.

⁴¹ *ibid*, paragraph 288.

costs, Lafarge Tarmac considered that it would be of benefit to the industry as it would focus cement companies on negotiating individually with its customers.⁴²

C5

28. In its response to the Remedies Notice, Lafarge Tarmac stated that it did not propose to comment on the proposed market data remedies on the basis that ‘publication of data by these public authorities is a matter for them alone, and Lafarge Tarmac has no ability or wish to influence the manner in which these authorities choose to exercise their functions’.⁴³ However, during the response hearing Lafarge Tarmac stated that [REDACTED].⁴⁴ Lafarge Tarmac also noted that, in the context of the CC’s merger review, both Lafarge and Tarmac had indicated to the CC that they would be prepared to limit the JV’s participation in any cement data exchange.⁴⁵

C6

29. Lafarge Tarmac considered that the ETS data was not only available on cement but covered other products such as asphalt and other industries’ data. If ETS data was published at a more aggregated level, it would not have any adverse impact on Lafarge Tarmac.⁴⁶

C7

30. Lafarge Tarmac’s position was restricted to the production of GBS. It had no activities in the conversion of GBS to GGBS or in the downstream supply of GGBS to customers. GBS facilities were co-located with steel- and iron-producing works and by their nature, GBS operations could not be operated away from the steelworks.⁴⁷ Lafarge Tarmac estimated that its 2011 activities in GBS contributed £[REDACTED] million to its EBITDA (before Selling, General and Administrative costs).⁴⁸
31. Lafarge Tarmac had agreements with Tata Steel and SSI to remove all slag produced at their respective steel plants.⁴⁹ In addition, Lafarge Tarmac had an exclusive contract with Hanson for the supply of GBS until 2029. It could only sell GBS to third parties or grind it itself once its stockpiles exceeded a specified amount provided that Hanson was given first refusal to supply the identified customer. Only the amount which exceeded the specified stockpile could be sold and to an entity who would not use it for the production of GGBS or any other cementitious product within GB or for resale within GB.⁵⁰
32. Lafarge Tarmac considered that the focus on GBS/GGBS provided the CC with ‘a unique opportunity to produce highly pro-competitive outcomes in the GB cement market’ as ‘the ability to secure access to low-cost local source of GGBS has the potential radically to change the structure of the GB cementitious market’.⁵¹

⁴² [Lafarge Tarmac response hearing summary](#), paragraph 38.

⁴³ [Lafarge Tarmac response to the Remedies Notice](#), paragraph 199.

⁴⁴ [Lafarge Tarmac response hearing summary](#), paragraph 39.

⁴⁵ [Lafarge Tarmac response to the Remedies Notice](#), paragraph 200.

⁴⁶ [Lafarge Tarmac response hearing summary](#), paragraph 40.

⁴⁷ [Lafarge Tarmac response to the Remedies Notice](#), paragraph 273.

⁴⁸ *ibid*, paragraph 274.

⁴⁹ [Lafarge Tarmac response hearing summary](#), paragraph 29.

⁵⁰ *ibid*, paragraph 28.

⁵¹ [Lafarge Tarmac response to the Remedies Notice](#), paragraph 275.

33. Lafarge Tarmac noted that Hanson did not grind GBS in its existing cement works but operated four facilities that were dedicated to grinding GBS and that those facilities were either co-located in or within the steelworks or were located very close to them.⁵² Lafarge Tarmac considered that whilst it was possible to operate GBS activities separately from GGBS activities, efficiencies may arise if operated together, more especially in the reduction of transport costs.⁵³
34. Lafarge Tarmac noted that it would be possible for three separate and independent parties to each operate a GGBS/GBS facility at each steelworks but that this might dissuade potential purchasers on the basis of 'high levels of uncertainty facing the long term operations of these [steel]works'.⁵⁴ Lafarge Tarmac considered that 'the operation by the steelworks themselves of the liquid blast furnace activities to produce GBS may overcome these problems'⁵⁵ and suggested that 'an appropriate remedy would involve the sale of GBS granulation activities back to the steelworks who would then be able to produce GBS and sell it on the open market to any willing purchaser'.⁵⁶ It noted that similar structural changes to the supply of GBS were recently introduced in Germany⁵⁷ and gave the example of Tata Steel in Europe, where it owned and ran the granulators and sold GBS directly to the open market.⁵⁸
35. Lafarge Tarmac understood that, currently, approximately 1.5 Mt of GBS was available from what was produced by the steelworks but was not ultimately ground to produce GGBS. It contended that if it were made available to any willing purchaser, it would immediately release 1.5 Mt of GGBS to the market. On the basis that GGBS can be blended with CEM I at a rate of 40 to 50 per cent, this would equate to an additional 2.5 Mt of blended grey cement which would 'place considerable downward pressure on cement prices in GB'.⁵⁹

Z1

36. Lafarge Tarmac did not believe cross-sales were an issue for its business due to its existing network and limited demand from the other majors to buy externally. Lafarge Tarmac purchased what it considered to be a 'de minimis' quantity of cement from Hanson and Cemex.⁶⁰

Z2

37. Lafarge Tarmac did not believe that information firewalls between the RMX and cement divisions of its businesses would be a viable remedy. Any firewall would need to be strong and Lafarge Tarmac would be likely to lose efficiency across its business in terms of its ability to manage its businesses. In addition, Lafarge Tarmac valued the ability of the businesses to work together to enlarge its offering to customers. Implementation of a firewall would also be difficult.⁶¹

⁵² *ibid*, paragraph 278.

⁵³ *ibid*, paragraph 279.

⁵⁴ *ibid*, paragraph 280.

⁵⁵ *ibid*, paragraph 281.

⁵⁶ *ibid*, paragraph 282.

⁵⁷ *ibid*, paragraph 285.

⁵⁸ [Lafarge Tarmac response hearing summary](#), paragraph 29.

⁵⁹ [Lafarge Tarmac response to the Remedies Notice](#), paragraph 283.

⁶⁰ [Lafarge Tarmac response hearing summary](#), paragraph 42.

⁶¹ *ibid*, paragraph 43.

38. Lafarge Tarmac believed the divestment of a stand-alone grinding station would attract more potential purchasers than the divestment of a cement plant. However, there would need to be a ready supply of clinker. Clinker could be imported from outside the ETS area. Imported clinker would have to be ground whereas imported cement was a ready product to be placed. As such, Lafarge Tarmac could not understand why it would be more beneficial for companies to import clinker rather than cement. The high price of electricity in the UK would also be a disadvantage to any potential purchaser of a grinding station to locally grind clinker.⁶²

Cemex

39. Cemex submitted a response to the CC's Remedies Notice plus a response to issues for comment in relation to the proposed remedies. It also attended a response hearing on 28 June 2013. Further to the response hearing, it submitted a supplemental submission and a further submission on other parties' responses to the provisional findings report and Remedies Notice.

C1

40. Cemex strongly disagreed with the provisional findings in respect of the cement market.⁶³ It considered that the CC had 'not been able to demonstrate that there is an AEC in the GB cement market and that therefore no remedies are necessary'.⁶⁴ Cemex considered the cement plant divestiture remedy 'intrusive and irreversible', 'disproportionate' and 'draconian'. It also considered that it would 'not be effective in remedying the AEC'.⁶⁵
41. In respect of the effectiveness of this remedy, Cemex considered that its asset base was particularly unsuited to divestiture remedies and would not lead to the creation of an effective or efficient competitor.⁶⁶ This was because it had only two cement plants.⁶⁷ In addition, Cemex did not believe that the CC needed to create a new player in the market as there already existed a new player in the form of HCM.⁶⁸
42. In respect of the proportionality of this remedy, Cemex stated that there were uncertainties in the CC's profitability and margins analysis⁶⁹ and consequently, an overstatement of the harm to consumers.⁷⁰ Cemex also considered that the CC had not taken sufficient account of the impact that the entry of HCM and the formation of Lafarge Tarmac would have on any alleged coordination in the GB cement market.⁷¹ It noted that HCM was fully operational and competing strongly for volumes. In addition, there had been a continuous growth in importers (in particular CRH⁷²) and Cemex had suffered significant price reductions for its products in the market just as costs were rising.⁷³ It asserted that the GB cement market was 'in flux and, to the

⁶² *ibid*, paragraph 44.

⁶³ [Cemex response to the Remedies Notice](#), paragraph 1.2.

⁶⁴ *ibid*, paragraph 2.1.

⁶⁵ *ibid*, paragraph 2.16.

⁶⁶ *ibid*, paragraph 3.50.

⁶⁷ *ibid*, paragraphs 3.51 & 5.7.

⁶⁸ [Cemex response hearing summary](#), paragraph 22.

⁶⁹ [Cemex response to the Remedies Notice](#), paragraphs 3.6–3.13.

⁷⁰ *ibid*, paragraphs 3.14 & 3.15.

⁷¹ *ibid*, paragraph 3.16.

⁷² [Cemex response hearing summary](#), paragraph 4; Cemex considered that CRH was more than likely in the process of becoming a major new importer. In paragraph 8 of the [Cemex response hearing summary](#), Cemex said that prices had dropped [X] per cent in 2013 as a consequent of Lafarge Tarmac and HCM competing hard for capacity.

⁷³ [Cemex response hearing summary](#), paragraph 3.

extent that any AEC exists, the market may self-correct as a result of the changes taking place'.⁷⁴

43. In a later submission, Cemex described HCM as 'a new aggressive force, pursuing a volume strategy' and 'the CC was wrong to assume that HCM will simply step into the shoes of Tarmac'. In particular, having had sight of Lafarge Tarmac's response to the provisional findings, Cemex noted that Lafarge Tarmac had estimated HCM's output to be 1.5 Mt whereas Cemex had previously estimated it to be 1.2 Mt. Cemex therefore considered HCM to be a bigger threat than it originally believed. Cemex also considered that 'given HCM's incentive to operate the Hope plant at close to full capacity it is likely that HCM's share of GB sales will actually be greater than 16% and its share of sales to the external GB cement market will be significantly higher'.
44. Cemex asserted that despite the UK market fundamentally changing in recent years, the CC had continued to place significant emphasis on historical evidence.⁷⁵ Again, Cemex pointed to the fact that it had only two cement plants and if the CC required Cemex to divest one of these, it would no longer be able to compete effectively in the GB cement market.⁷⁶ As it was, Cemex [redacted] and therefore, if it was forced to divest a cement plant, it would have a greater impact on it rather than its competitors.⁷⁷
45. Cemex's cement plant at Rugby accounted for approximately [redacted] per cent of Cemex's clinker production capacity and over [redacted] per cent of Cemex's cement production. The sale of Rugby would therefore result in [redacted].⁷⁸
46. [redacted]⁷⁹
47. Cemex expressed concern that if the CC were to impose a cement (or RMX) divestiture remedy, it would lead to the sale of assets at less than fair value on the basis that the sale of the assets would take place 'in the midst of a severe economic downturn and most likely, at the bottom of the economic cycle'.⁸⁰ Cemex considered that a forced sale of assets at an undervalue would undermine its financial viability given that [redacted], which was a relevant factor for the CC to consider in its assessment of proportionality,⁸¹ and that [redacted], which would lead to an [redacted] and would restrict its ability to compete effectively in the market.⁸² In a later submission, Cemex observed that 'Hanson notes that where possible it strategically matches its RMX sites to its aggregates sites' and that 'Cemex follows a similar strategy and any divestment of RMX sites by Cemex would adversely affect its aggregates business'.
48. Cemex considered that only one further cement producer with adequate capacity to serve the external market was necessary to achieve an effective remedy. However, Cemex believed that to the extent that there was any coordination in the GB cement market, the entry of HCM had already 'greatly disrupted the market and contributed to a reduction in cement prices'.⁸³

⁷⁴ [Cemex response to the Remedies Notice](#), paragraph 3.19.

⁷⁵ [Cemex response hearing summary](#), paragraph 2.

⁷⁶ [Cemex response to the Remedies Notice](#), paragraph 5.15(c), 'Cemex notes that Hanson has submitted that in order to continue to serve its current and future customer obligations with only two plants, Hanson would incur additional costs amounting to millions of pounds' and that 'this applies even more strongly to Cemex as the divestment of either of Cemex's two cement plants would mean that Cemex would have to serve its current and future customer obligations with only one plant'. Cemex also stated that a divestment of its Rugby plant [redacted].

⁷⁷ [Cemex response hearing summary](#), paragraph 15.

⁷⁸ [Cemex response to the Remedies Notice](#), paragraph 5.16.

⁷⁹ *ibid*, paragraph 5.18.

⁸⁰ *ibid*, paragraph 3.36.

⁸¹ *ibid*, paragraph 3.37.

⁸² *ibid*, paragraph 3.38.

⁸³ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 2.3.

49. Cemex was unable to comment on whether a divestiture of cement production capacity from Hanson or Lafarge Tarmac should be considered,⁸⁴ or on the specific plants of Hanson or Lafarge Tarmac which would most likely form the basis of an effective divestiture package. However, Cemex considered that in order to constitute an effective remedy, the divested cement plant should, at a minimum, have the following characteristics:
- (a) It should have adequate capacity to compete and take advantage of economies of scale. Cemex considered that such a plant should have 1.2 Mt as a minimum.
 - (b) It should ideally be rail-linked.⁸⁵
 - (c) It should be situated close to its quarry site and security of supply should be ensured.
 - (d) It should follow a fully dry process of cement production (as opposed to semi-dry or a semi-wet process which are more energy intensive resulting in increased production costs).⁸⁶
50. Cemex considered that given the [REDACTED], and the requirement for the CC to address the AEC swiftly, that latent production capacity should be disregarded in assessing the extent of divestiture necessary.⁸⁷ In particular, Cemex considered that the [REDACTED]⁸⁸ and assumed that [REDACTED].⁸⁹ It also stated that it needed to retain a certain amount in order to cope with any potential upturn in the market.⁹⁰
51. Cemex considered that it was unnecessary for a cluster of RMX plants to be divested along with cement production capacity in order to be effective.⁹¹ Should such a producer decide that they wished to build or acquire their own ready-mix plant they could do so easily.⁹² [REDACTED]⁹³ without such a capacity and had competed successfully in both ready-mix and cement.⁹⁴ [REDACTED]
52. In respect of purchaser suitability, Cemex considered that it would serve as an advantage for an acquirer of a cement plant to have previous experience of operating in the GB cement (or closely related) markets. Cemex saw no reason why [REDACTED] would not be a suitable purchaser of divested cement capacity.⁹⁵ Cemex considered that the CC should allow at least six to ten months to agree final undertakings and a further 12 months to complete divestiture of the cement capacity.⁹⁶ Cemex considered that a reasonable divestiture period was required to obtain a fair value for the asset and to ensure that the relevant asset could be properly separated from the business and handed over to the purchaser. Undertakings which imposed a general duty to

⁸⁴ *ibid*, paragraph 2.5.

⁸⁵ From a supply-side perspective, Cemex viewed the market as national in that each cement plant, in its own right, could reach every part of the country. Therefore, location was a factor that an investor would have to balance against other aspects of the plant in question. Rail links would be a critical factor to consider for such an investor and would affect the purchase price. (Cemex response hearing summary, paragraph 23.)

⁸⁶ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 2.10.

⁸⁷ *ibid*, paragraph 2.8.

⁸⁸ However, Cemex said during the response hearing held on 28 June 2013 that, 'although it was not technically difficult to bring capacity online at a plant such as Ferriby, it would be very expensive.'

⁸⁹ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 2.7.

⁹⁰ [Cemex response hearing summary](#), paragraph 24.

⁹¹ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 2.12.

⁹² [Cemex response hearing summary](#), paragraph 27.

⁹³ In respect of [REDACTED], Cemex had no RMX operations when it entered those geographic markets and was able to operate viably and Cemex continues to operate in those markets with very low levels of vertical integration. It also operated stand-alone cement plants in [REDACTED].

⁹⁴ [Cemex response hearing summary](#), paragraph 26.

⁹⁵ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 2.14.

⁹⁶ *ibid*, paragraph 2.16.

maintain the divestiture package in good order and not to undermine the competitive position of the package were appropriate.⁹⁷

C2

53. Cemex noted that the CC had not found an AEC in the RMX market rendering the forced divestiture of RMX plants unnecessary.⁹⁸ Its primary objection to this remedy was that it would not be effective in achieving the aims set out in the Remedies Notice and was disproportionate.⁹⁹
54. Regarding increasing the size of the addressable market, Cemex stated that the current size of the market was 4.5 million tonnes which accounted for approximately 50 per cent of GB cement production. As such, Cemex considered that an addressable market of that size already provided a sufficient incentive to enter and expand in the GB cement market.¹⁰⁰ Cemex contended that there had been little indication from customers or competitors that the size of the addressable market constituted a barrier to entry.¹⁰¹ In addition, there was no evidence to show that if the addressable market increased in size it would result in more cement producers entering the market or existing cement importers expanding their operations.¹⁰² Cemex considered that no expansion by importers was possible because of the cost disadvantage they faced.¹⁰³
55. In a subsequent submission, Cemex rejected the argument that the size of the addressable market around import terminals acted as a barrier to entry. It stated that 'as there is no separate market around import terminals it is disingenuous to suggest that the size of the addressable market around import terminals acts as a barrier to entry' which was highlighted 'by the entry of CRH which operates only import terminals but is able to supply of GB'. It also asserted that the addressable market for independent cement producers was not restricted to supplying fixed RMX plants and noted that 'in recent years, there has been a drift away from fixed RMX plants to volumetric trucks and precast concrete'.
56. While Cemex noted that, in theory, a reduction in cross-sales would lead to less transparency, it contended that 'a divestiture of RMX plants sufficient to stop all cross-sales would clearly be disproportionate'.¹⁰⁴ It also noted that the CC had acknowledged a reduction in cross-sales in recent years and therefore 'the imposition of an intrusive and irreversible remedy such as divestment would be unreasonable when the feature of the market it attempts to address has been greatly reduced'.¹⁰⁵
57. Cemex considered that countervailing buyer power would not be created even where a large number of RMX plants were divested to a single purchaser. This was because most customers bought at 'job-site level and not at customer level', meaning that a single job site would not have any more buyer power than such sites have at present.¹⁰⁶ Cemex contended that the creation of cement buying groups 'would be a less intrusive, and therefore more proportionate, method of achieving this objec-

⁹⁷ *ibid*, paragraph 2.17.

⁹⁸ [Cemex response to the Remedies Notice](#), paragraph 5.26.

⁹⁹ *ibid*, paragraph 5.27.

¹⁰⁰ *ibid*, paragraph 5.28.

¹⁰¹ *ibid*, paragraph 5.29.

¹⁰² *ibid*, paragraph 5.30.

¹⁰³ *ibid*, paragraph 5.32.

¹⁰⁴ *ibid*, paragraph 5.33.

¹⁰⁵ *ibid*, paragraph 5.34.

¹⁰⁶ *ibid*, paragraph 5.36.

tive'.¹⁰⁷ It also considered that 'a remedy implementing a mechanism for mandatory competitive tendering for a specified quantity of cement for all the vertically integrated producers' RMX plants (to include HCM) would be more proportionate than a RMX divestiture'.¹⁰⁸

58. Cemex considered this remedy to be particularly disproportionate and cited the same reasons that it did in respect of the cement plant divestiture remedy, namely that it had not contributed to the allegedly [§] in the GB cement market, that it had not contributed to consumer harm and that a forced divestiture of RMX plants would lead to sales of assets at below market price.¹⁰⁹
59. Cemex considered that the divestment of RMX plants would not be substantially different from that of cement plants. The only difference Cemex noted was that the due diligence for a potential buyer would be more complicated due to the large number of locations involved and the need for an environmental analysis of each site.¹¹⁰
60. Cemex considered that this remedy should be implemented only for a period of up to three years, which would go some way towards achieving the CC's aims of increasing the size of the addressable market and encourage entry, while providing a new cement entrant with sufficient time to establish a reputation and/or set up its own RMX network.¹¹¹
61. Initially, Cemex considered that 'a target VI ratio could be adopted' but that it 'cannot be applied in an indiscriminate manner, which would result in the loss of GB producers' profitable RMX plants'.¹¹² In particular, Cemex considered that it would not be appropriate to 'apply the same VI ratio to all of the Top 3 cement producers, without taking account of the impact the divestments would have on each producer's overall profitability'.¹¹³ However, in a subsequent submission, Cemex noted 'that if the CC were to require Cemex and Hanson to reduce their levels of vertical integration by divesting RMX plants, this would have the unintended consequence of making Cemex, Hanson and Lafarge *more* symmetrical', which would not accord with the CC's Market Investigation Reference Guidelines.¹¹⁴ Cemex also noted that 'the risks posed by Cemex, Hanson and Lafarge each having a similar level of vertical integration was expressly recognised by the CC in its assessment of the *Lafarge/Tarmac* merger' and 'even if the CC does not accept that it is formally bound by its statements in the *Lafarge/Tarmac* merger inquiry, it would be absurd, and contrary to the principles of legal certainty, if the CC were to impose remedies which resulted in the exact scenario which it went to great lengths to avoid'.
62. Cemex considered that there should be no restriction on the Top 3 producers from acquiring new RMX capacity¹¹⁵ even if forced to divest current RMX capacity. This was because the average age of Cemex's RMX plants was 35 years and it would need to replace or replenish them.¹¹⁶

¹⁰⁷ *ibid*, paragraph 5.37.

¹⁰⁸ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 3.3.

¹⁰⁹ [Cemex response to the Remedies Notice](#), paragraph 5.42.

¹¹⁰ [Cemex response hearing summary](#), paragraph 29.

¹¹¹ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 3.4.

¹¹² *ibid*, paragraph 3.7.

¹¹³ *ibid*, paragraph 3.10.

¹¹⁴ [CC Market Investigation Reference Guidelines](#), paragraph 252(d).

¹¹⁵ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 3.14.

¹¹⁶ [Cemex response hearing summary](#), paragraph 28.

63. In terms of the timing for implementing this remedy, Cemex reiterated the same timings and need for undertakings that it set out in respect of the cement plant divestiture remedy.

C3

64. Cemex considered that this remedy could be combined with remedy C5 in the event that the CC felt that remedy C5 was not adequate in isolation.¹¹⁷ However, Cemex was of the view that C5 alone would 'undermine the alleged coordination such that there will be no requirement to create buyer power'.¹¹⁸

65. It considered that remedy C3 'would significantly increase buyer power in the GB cement market'¹¹⁹ and cement buying groups should get a better price due to buying in bulk.¹²⁰ In addition, cement buying groups 'would create a number of large buyers and thereby undermine the alleged coordinated agreement by increasing incentives for cement producers to deviate'.¹²¹ Subject to the following three conditions, Cemex agreed with the CC's proposal to create cement buying groups:

(a) There was no requirement to sell a specific proportion of cement to cement buying groups on the basis that it would be disproportionate and interfered with GB cement producers' freedom to contract. There was also a risk that cement buying groups could hold 'GB cement producers to ransom' and 'will result in cement being sold below the competitive price' unless the CC imposed a minimum price and acted as a regulator.

(b) It would not be mandatory for cement producers to join a cement buying group.

(c) There was no requirement on any GB cement producer to be required to administer or pay for the cement buying groups.

66. Cemex considered that demand for cement was on a regional basis and therefore regional cement buying groups would meet the needs of customers better.¹²² It also considered that membership of a cement buying group should be open to all independent cement purchasers including intermediaries and builders' merchants.¹²³

67. Cemex considered that contracts between cement buying groups and cement producers should be 'freely negotiated' and strongly objected to any requirement which prohibited cement buying group members from negotiating prices bilaterally on the basis that it would be 'grossly disproportionate and market distorting'.¹²⁴ Cemex also considered that 'the supplier should be able to take full account of whether a potential customer is credit worthy and be free to refuse to supply to a customer if terms cannot be agreed'.¹²⁵

68. Cemex considered that there would be technical problems with cement buying groups due to the fact that when buying bulk cement, RMX companies would need two to three weeks to test it in order to understand its particular qualities and how it

¹¹⁷ [Cemex response to the Remedies Notice](#), paragraph 5.46.

¹¹⁸ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 4.4.

¹¹⁹ [Cemex response to the Remedies Notice](#), paragraph 4.54.

¹²⁰ [Cemex response hearing summary](#), paragraph 31.

¹²¹ [Cemex response to the Remedies Notice](#), paragraph 4.56.

¹²² [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 4.6.

¹²³ *ibid*, paragraph 4.10.

¹²⁴ *ibid*, paragraph 4.14.

¹²⁵ *ibid*, paragraph 4.8.

might perform with different mixtures.¹²⁶ However, Cemex did not believe that it would be difficult to establish regional buying groups from an administrative perspective, once the technical difficulties concerning the specification of cement had been overcome.¹²⁷

C4

69. Cemex noted that the adverse effects of sending generalized price announcement letters identified by the CC (ie price leadership, price following and softening customer resistance to price increases) was not the primary AEC identified by the CC.¹²⁸ However, Cemex acknowledged that generalized price announcement letters played a 'secondary role of pricing information'¹²⁹ and considered that it was 'clear that a prohibition on generalized price announcement letters would reduce transparency and address a number of the CC's concerns'.¹³⁰
70. Cemex stated that it would still need to communicate price increases to customers in writing and proposed that GB cement producers should be permitted to send individualized pricing letters.¹³¹ It considered that a blanket prohibition on sending individualized price letters to customers would be disproportionate and would create transaction costs for both cement producers and customers. Individualized price letters would 'contain a new customer-specific price rather than a percentage increase'¹³² but a general template 'would unduly restrict the commercial freedom of the cement producers and customer to negotiate in their preferred manner'.¹³³
71. Cemex reiterated that remedy C5 by itself should be adequate to address the AEC identified by the CC, but if the CC was not satisfied, remedy C4 could be combined with remedy C5.¹³⁴ Cemex stated that the CC's concerns related to transparency of pricing information in the cement market and not to other markets, and therefore there was no reason to restrict price announcements in markets other than bulk and bagged cement.¹³⁵
72. Cemex considered that for there to be an effective remedy, a restriction on sending generalized price announcement letters should apply to all GB cement producers (including HCM) and importers into GB in the interests of equity.¹³⁶

C5

73. Cemex considered that this remedy option 'would be adequate *in itself* to remedy the AEC identified' but if the CC did not, it could be combined with all or any of remedies C3, C4, C6 and Z2.¹³⁷ Cemex contended that the remedy option was sufficient in isolation to address the alleged AEC on the basis that the CC considered that for each GB cement producer, the focal point was its own share of GB cement sales.¹³⁸

¹²⁶ [Cemex response hearing summary](#), paragraph 30.

¹²⁷ *ibid*, paragraph 33.

¹²⁸ [Cemex response to the Remedies Notice](#), paragraph 4.40.

¹²⁹ *ibid*, paragraph 4.41.

¹³⁰ *ibid*, paragraph 4.47.

¹³¹ *ibid*, paragraph 5.53.

¹³² [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 5.6.

¹³³ *ibid*, paragraph 5.8.

¹³⁴ [Cemex response to the Remedies Notice](#), paragraph 4.48.

¹³⁵ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 5.3.

¹³⁶ *ibid*, paragraph 5.4.

¹³⁷ [Cemex response to the Remedies Notice](#), paragraph 2.5.

¹³⁸ Paragraph 4.20, [Cemex response to the Remedies Notice](#), which makes reference to paragraph 8.164 of the CC's provisional findings.

However, Cemex did not agree with the CC's assertion that the Majors used MPA/BIS data to distort competition, rather that 'it aided Cemex in planning its volumes'.¹³⁹

74. Consistent with the CC's analysis, Cemex considered 'that publication of cement sales and production data after a time lag, such that it would no longer be of use to GB cement producers in monitoring their own shares of sales and production or those of its rivals, would be a particularly effective remedy to eliminate completely the alleged coordination in the GB cement market'.¹⁴⁰ It considered that a time lag of three months would be appropriate in that it would ensure that GB cement producers were 'not able to reliably monitor their own share of monthly production and this would be sufficient to undermine any alleged coordination'.¹⁴¹
75. Cemex considered that the MPA data was required to reach a revised coordinated agreement¹⁴² and that other sources of information which might increase transparency such as win/loss data, information from customers and information obtained as cement buyers were 'supplemental' to the main MPA/BIS data¹⁴³ and could not, on their own, permit monitoring of the alleged coordinated agreement.¹⁴⁴ Cemex pointed out that there had been significant changes to parties' shares of capacity following the formation of HCM and Lafarge Tarmac, meaning that the terms of the alleged coordination based on shares of sales required revision which 'would not be possible in the absence of data showing GB cement production and sales'. That being the case, 'the absence of recent MPA data would not only make monitoring of any coordinated agreement impossible, but it would also not be possible to reach a revised tacit agreement necessitated by changes in the capacity of each market participant'.¹⁴⁵
76. Cemex considered that it was not necessary to make provision for disclosure of aggregated cement market data before the expiry of the specified time lag.¹⁴⁶ It also considered that GB cement producers should be able to supply sales and production volume data to trade associations and other private sector organizations after the expiry of an appropriate time lag, which it considered should be no more than three months in the case of monthly data.¹⁴⁷ Cemex considered that it would not be problematic to remove the regional breakdown of data as, while it would make Cemex's long-term planning process more difficult, 'it would also prevent its competitors from tracking the impact of other players in particular parts of the county'.¹⁴⁸

C6

77. Cemex noted that remedy C6 was aimed at reinforcing the reduction of transparency envisaged by remedy C5,¹⁴⁹ and that while remedy C5 would be adequate in itself to address the AEC identified by the CC, remedy C6 would provide a further layer of security.¹⁵⁰ Cemex noted that the CC viewed the EU ETS data 'as supplemental to the primary data facilitating coordination', being the MPA data, and that it was there-

¹³⁹ [Cemex response hearing summary](#), paragraph 17.

¹⁴⁰ [Cemex response to the Remedies Notice](#), paragraph 4.15.

¹⁴¹ [Cemex response to the Issues for comment in the Remedies Notice](#), paragraph 6.3.

¹⁴² [Cemex response to the Remedies Notice](#), paragraph 4.25.

¹⁴³ *ibid*, paragraph 4.23.

¹⁴⁴ *ibid*, paragraph 4.24.

¹⁴⁵ *ibid*, paragraph 4.28.

¹⁴⁶ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 6.5.

¹⁴⁷ *ibid*, paragraph 6.7.

¹⁴⁸ [Cemex response hearing summary](#), paragraph 19.

¹⁴⁹ [Cemex response to the Remedies Notice](#), paragraph 4.32.

¹⁵⁰ *ibid*, paragraph 4.35.

fore only appropriate to implement this remedy if the CC was of the view that remedy C5 would be insufficient to address the alleged AEC.¹⁵¹

78. Cemex said that the EU ETS data did not play a significant role for Cemex commercially; rather it was used by its sustainability team to validate whether its emissions figures were accurate.¹⁵² It considered that six months would be a sufficient time lag for the publication of annual verified carbon emissions data¹⁵³ and that a delay in publication would be an effective and proportionate remedy which would reduce transparency while at the same time allowing the EU ETS to achieve its objective.¹⁵⁴
79. Cemex noted that ‘this remedy option would require a change in how the European Commission reports and presents its published data for GB’.¹⁵⁵

C7

80. Cemex stated in its written response to the Remedies Notice that [REDACTED].¹⁵⁶ During the response hearing, Cemex said that even if there were more competition in the market for GGBS and this resulted in lower prices, Cemex would not look to increase the amount of GGBS that it purchased.¹⁵⁷
81. Cemex did not know whether increased competition would drive down prices, as this factor was dependent upon negotiation. Cemex often used PFA as opposed to GGBS for certain mixes of material depending on its clients’ requirements.¹⁵⁸

Z1

82. Cemex considered ‘that a remedy implementing a mechanism for mandatory competitive tendering for a specified quantity of cement for the [sic] all the vertically integrated producers’ RMX plants (including HCM’s RMX plants) would be more proportionate than a RMX divestiture’.¹⁵⁹ It rejected any suggestion that this remedy would be difficult to monitor and noted the safeguards proposed by Hanson. However, Cemex also noted the reduction in cross-sales in recent years¹⁶⁰ and that [REDACTED].¹⁶¹

Z2

83. Cemex considered that ‘relatively simple and specific information barriers can be put in place between GB cement producers’ cement and RMX divisions to reduce the transparency arising as a result of vertical integration’ which would entail a prohibition on the following information being shared:
- the price paid for cement to competitors;
 - cement price announcement letters received from competitors;

¹⁵¹ *ibid*, paragraph 4.38.

¹⁵² [Cemex response hearing summary](#), paragraph 20.

¹⁵³ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 7.3.

¹⁵⁴ *ibid*, paragraph 7.5.

¹⁵⁵ [Cemex response to the Remedies Notice](#), paragraph 4.33.

¹⁵⁶ *ibid*, paragraph 2.27.

¹⁵⁷ [Cemex response hearing summary](#), paragraph 35.

¹⁵⁸ *ibid*, paragraph 36.

¹⁵⁹ [Cemex response to the Issues for Comment in the Remedies Notice](#), paragraph 3.3.

¹⁶⁰ [Cemex response to the Remedies Notice](#), paragraph 5.34.

¹⁶¹ *ibid*, paragraph 5.35.

- information received from competitors on prices of cement charged to other RMX customers; and
- the price charged to RMX competitors for cement.¹⁶²

84. Cemex noted that this proposed remedy was ‘a variant of the CC’s Remedy X3’ which the CC had decided not to pursue on the basis that it would be very difficult to specify, monitor and enforce an effective code of conduct without intrusive ongoing surveillance and supervision of the internal activities of the Top 3.¹⁶³ Cemex disagreed with the CC and considered that its proposed remedy ‘would not create any specification, circumvention, distortion or monitoring and enforcement tasks’.¹⁶⁴ It said that it already had such a mechanism in place as it was Cemex’s policy to run its business as separate entities to a certain extent.¹⁶⁵

Z3

85. Cemex considered that a divestiture of its [REDACTED] grinding mill would not contribute to the creation of an effective competitor on the basis that: [REDACTED]^{166, 167, 168}

86. However, if the CC was of the view that the sale of [REDACTED] would be effective as it could grind imported cement, Cemex noted that [REDACTED]. Therefore, it would be disproportionate to require Cemex to divest [REDACTED].¹⁶⁹ Furthermore, Cemex considered that [REDACTED].¹⁷⁰

Hanson

87. Hanson submitted a response to the Remedies Notice and attended response hearings on 2 July and 23 July 2013.

C1

88. Hanson did not agree with core findings of the provisional findings in as far as they related to cement and GGBS¹⁷¹ and on that basis, Hanson believed that there was no AEC to address in any of the relevant markets and therefore no remedies were required.¹⁷²

89. Hanson considered that the cement divestiture remedy (and the RMX and GGBS divestiture remedies) ‘would be highly intrusive and involve interference with property rights’ which were protected under the European Convention of Human Rights. Accordingly, ‘a higher standard of proof’, ‘stronger requirements for procedural fairness’ and ‘a greater focus on the reasonableness of proportionality of such remedies’ were required.¹⁷³ Hanson asserted that the CC ‘should consider, as a maximum, a package of behavioural remedies (for example remedies C3, C4, C5

¹⁶² *ibid*, paragraph 4.50.

¹⁶³ *ibid*, paragraph 4.51.

¹⁶⁴ *ibid*, paragraph 2.13.

¹⁶⁵ [Cemex response hearing summary](#), paragraph 37.

¹⁶⁶ [Cemex response to the Remedies Notice](#), paragraph 5.13 (a).

¹⁶⁷ *ibid*, paragraph 5.13(b).

¹⁶⁸ *ibid*, paragraph 5.13(c).

¹⁶⁹ *ibid*, paragraph 5.20.

¹⁷⁰ *ibid*, paragraph 5.21.

¹⁷¹ [Hanson response to the Remedies Notice](#), paragraph 1.3.

¹⁷² *ibid*, paragraph 1.4.

¹⁷³ *ibid*, paragraphs 1.7 & 2.14.

and C6)' plus it volunteered a further remedy requiring external purchases of cement by GB cement producers to be subject to a tendering process (remedy Z1).¹⁷⁴

90. In respect of proportionality, Hanson stated that there were 'a number of factors which demonstrated that it would not be proportionate to impose any remedy designed to alter the *structure* of the cement, RMX or GGBS sectors' to include the 'damaging potential impact of any such remedies', 'the lack of evidence of detrimental effects' and the 'dynamic market situation'.¹⁷⁵
91. Regarding the impact on Hanson of the cement divestiture remedy, Hanson stated that mandatory divestment of a cement plant by Hanson 'would be catastrophic for the Hanson business'. In particular, it would suffer [X] impairment costs and stated that the divestment of [X] would result in £[X] million impairment costs.¹⁷⁶ Hanson considered that without the [X] tonnes of clinker capacity of [X], it would not be able to service its current level of demand and that a divestment of its [X] would 'reduce Hanson's capacity [X]' which would be 'unduly punitive on Hanson and would remove from the competitive market an operator having a suitably strong production capacity and status as an effective major competitor'.¹⁷⁷ It also said that [X] was an integral part of its logistics and overhead structure and therefore a key part of its portfolio.¹⁷⁸ It also stated that 'such a divestment would more likely result in a collapse in Hanson's market share, causing a reduction in operation and footprint as a GB cement major resulting in [X] business that ultimately increased costs for customers and consumers'. Hanson considered that a reduction in the number of cement plants from three to two 'would threaten Hanson's underlying business model and could [X]'.¹⁷⁹
92. Regarding lack of detrimental effects, Hanson stated that the CC had not shown that the perceived AEC had led to any adverse effects on direct, or indirect, customers,¹⁸⁰ and that the CC placed 'significant weight on its findings of excessive profitability'¹⁸¹ even though the CC's approach to calculating industry profitability was 'fundamentally flawed'.¹⁸² Hanson asserted that even if the CC's profitability figures were correct,¹⁸³ 'they would not provide sufficient grounds on which to conclude that a divestment remedy is proportionate'.¹⁸⁴
93. Hanson considered that a cement divestiture would not be effective and that the CC had 'not considered how a structural remedy and the consequential creation of a fifth or sixth cement producer would remedy any AEC'.¹⁸⁵ It asserted that case law had 'shown that, in nearly all of five-to-four merger cases, a "well functioning market" has been maintained and the merger has been approved'¹⁸⁶ and that 'it would appear that the [CC was] looking to create a theoretical position of "perfect competition" and that 'Such an approach would clearly be disproportionate'.¹⁸⁷

¹⁷⁴ *ibid*, paragraph 1.14.

¹⁷⁵ *ibid*, paragraph 1.10.

¹⁷⁶ *ibid*, paragraph 3.5.

¹⁷⁷ *ibid*, paragraph 3.7.

¹⁷⁸ [Hanson response hearing summary](#), 2 July 2013, paragraph 18.

¹⁷⁹ [Hanson response to the Remedies Notice](#), paragraph 3.6.

¹⁸⁰ *ibid*, paragraph 3.10.

¹⁸¹ *ibid*, paragraph 3.11.

¹⁸² *ibid*, paragraph 3.12.

¹⁸³ The customer detriment figure contained in the CC's provisional findings was £180 million.

¹⁸⁴ [Hanson response to the Remedies Notice](#), paragraph 3.13.

¹⁸⁵ *ibid*, paragraph 3.27.

¹⁸⁶ *ibid*, paragraph 3.28.

¹⁸⁷ *ibid*, paragraph 3.29.

94. Hanson stated that the dynamic nature of the market was ‘fundamental to any theory of harm relating to cement markets’ and ‘to any decision on remedies’¹⁸⁸ yet the CC had not ‘performed any form of cogent assessment or analysis of the very significant recent markets developments highlighted in any of Hanson’s responses to Working Papers’ and that this represented ‘a substantial procedural failure’ on the part of the CC which ‘would result in any proportionality analysis being fundamentally flawed’.¹⁸⁹ Hanson asserted that the impact of the Lafarge Tarmac JV, establishment of HCM and the scaling up of CRH meant that it was ‘impossible for the Commission to predict the market outlook and development of competition in the future’.¹⁹⁰
95. Hanson considered that ‘HCM’s supply chain within the wider Mittal group will give it a significant competitive advantage’ with ‘access to overseas clinker and GBS to grow market share and aggressively attract customers away from other Majors’.¹⁹¹ Hanson believed that HCM would have a 16 per cent market share in cement capacity being a 60 per cent increase in comparison with Tarmac’s pre-JV share of 10 per cent which meant that ‘HCM now sits alongside Hanson and Cemex as a leading, and one of the largest, cement and concrete companies in the UK’.¹⁹² Hanson stated that ‘Tarmac’s business model was one of focus on self-supply, whereas Hope’s is the opposite with the necessary reliance on external sales to achieve its share. Unlike Tarmac, HCM is “long” in cement with very significant surplus to carry out external sales’. According to Hanson, the entry of HCM ‘fundamentally changes the market dynamic’¹⁹³ having [redacted] and having gained ‘significant contracts from key customers for large quantities of cement’.¹⁹⁴ Hanson said that it had observed a higher level of tendering in the market following the entry of HCM, which created greater competition and downward pressure on pricing.¹⁹⁵ Hanson considered that the creation of HCM following the Lafarge Tarmac JV had ‘scope to undermine any perceived coordination in the GB cement markets’ and ‘it would now seem extraordinary for the [CC] to work immediately to levy further remedies, when it has only just implemented the most severe and fundamental remedy that is possible’.¹⁹⁶
96. Hanson also considered that ‘recent acquisitions by CRH introduces further structural change and uncertainty to the market’ and pointed to CRH’s acquisition of Southern Cement from Cementos Portland Valderrivas (CPV) in February 2013 plus ‘numerous assets of the Dudman importer business’.¹⁹⁷ Hanson considered that CRH had ‘significantly scaled up its GB operations now having access to five import terminals (compared with one previously), allowing it to become a major player in the GB cement market’¹⁹⁸ and that CRH had ‘internal access to virtually unlimited quantities of locally produced cement (through Irish Cement’s facilities in Castlemungret, Limerick and Platin Co, Meath)’. As such, Hanson did not consider that the cost penalty disadvantage faced by imports applied to CRH.¹⁹⁹ Hanson considered that the expansion of CRH in the UK was representative of the trend towards overseas cement producers establishing a significant presence in the market²⁰⁰ who might see the UK as an attractive outlet for the excess capacity overseas.²⁰¹ Hanson noted that

¹⁸⁸ *ibid*, paragraph 3.30.

¹⁸⁹ *ibid*, paragraph 3.31.

¹⁹⁰ *ibid*, paragraph 3.32.

¹⁹¹ *ibid*, paragraph 3.33.1.

¹⁹² *ibid*, paragraph 3.33.2.

¹⁹³ *ibid*, paragraph 3.33.3.

¹⁹⁴ *ibid*, paragraph 3.33.4.

¹⁹⁵ [Hanson response hearing summary](#), 2 July 2013, paragraph 6.

¹⁹⁶ [Hanson response to the Remedies Notice](#), paragraph 3.36.

¹⁹⁷ *ibid*, paragraph 3.38.

¹⁹⁸ *ibid*, paragraph 3.39.1.

¹⁹⁹ *ibid*, paragraph 3.39.2.

²⁰⁰ [Hanson response hearing summary](#), 2 July 2013, paragraph 8.

²⁰¹ *ibid*, 2 July 2013, paragraph 10.

Paragon had started to sell surplus cement on the open market, which contributed to the changing market dynamic.²⁰²

97. Hanson did not believe that there was room in the market for a new competitor as it would impact the financial viability of existing players and so prove adverse. It considered that a fifth GB cement producer would not have the effect of reducing prices as it believed there was already sufficient competition in the market. It suggested that any new player would have to price cement in a manner that would generate sufficient returns to cover the substantial fixed costs involved in operating a cement plant, and the subsequent volumes required to achieve this could potentially be severe for the viability of the established players in the market.²⁰³
98. Regarding potential divestiture of latent capacity, although Hanson had a [X]. Hanson considered that without some form of latent capacity, its ability to compete in the market and expand would be significantly reduced.²⁰⁴
99. Hanson believed it was difficult to comment on which cement plants might be suitable for divestiture. Numerous factors had to be considered, such as capacity, access to customers, rail linkage, access to sufficient resources and associated planning permission. It considered that the specific criteria would depend upon the strategy of any new investor. However, it believed London and the South-East was the most important market and therefore a new player would need to be able to access that market.²⁰⁵ Hanson considered that there were a range of possible purchasers of a divested cement plant such as CRH, Aggregate Industries/Holcim, a steel company or private equity entity.²⁰⁶
100. Hanson did not consider that it was necessary for any potential purchaser of a divested cement plant to own RMX plants alongside a cement plant. It also considered that the CC's suggestion of divesting RMX plants along with a cement plant was counter-intuitive given the CC's concerns regarding vertical integration. Given the low barriers to entry of the RMX market, it would be easy for a purchaser to acquire RMX plants.²⁰⁷

C2

101. Hanson stated that the divestiture remedy relating to RMX (and GGBS) 'would, if addressed to Hanson, seek to unwind an industry structure which has been expressly approved by the European Commission ... in its *Heidelberg/Hanson* merger decision'.²⁰⁸ Accordingly, Hanson believed that, as a result, it was now beyond the CC's power to order a structural remedy,²⁰⁹ but if the CC disagreed, the CC should consider the decision of the European Commission in its analysis of proportionality.²¹⁰ Hanson noted that the OFT had the opportunity to request a reference back to the UK if it considered at the time that the merger was either of significant importance to the UK or that it had some other legitimate interest in doing so,²¹¹ but the OFT failed to do so which Hanson interpreted to mean that 'the OFT did not have

²⁰² *ibid*, 2 July 2013, paragraph 8.

²⁰³ *ibid*, 2 July 2013, paragraph 19.

²⁰⁴ *ibid*, 2 July 2013, paragraph 21.

²⁰⁵ *ibid*, 2 July 2013, paragraph 23.

²⁰⁶ *ibid*, 2 July 2013, paragraph 24.

²⁰⁷ *ibid*, 2 July 2013, paragraph 20.

²⁰⁸ [Hanson response to the Remedies Notice](#), paragraph 4.1.

²⁰⁹ *ibid*, paragraph 4.2.1.

²¹⁰ *ibid*, paragraph 4.2.2.

²¹¹ *ibid*, paragraph 4.7.

any significant objections to the alterations to the degree of vertical integration on cement and GGBS markets'.²¹²

102. Hanson stated that its business strategies and contractual arrangement had 'been based on the reasonable belief and legitimate expectation that the inter-relationship between Hanson's cement business with both RMX and GGBS did not have an anti-competitive effect' and as there had been no material change in circumstances since the acquisition, 'it would be disproportionately detrimental to Heidelberg Cement and Hanson to order structural remedies'.²¹³
103. Hanson did not consider that coordination existed in the RMX market and that 'even if it were to exist, the vertical integration between cement and RMX/concrete products producers is not a factor materially facilitating that coordination'.²¹⁴
104. With regard to the size of the addressable market, Hanson considered that a market where 'some 60 per cent of GB bulk cement demand is already represented by non-GB cement producers' was sufficient, and it pointed to the Airtours decision. It also stated that the independent RMX sector had been growing despite the downturn and that the relative growth of importers suggested 'that the size of the addressable market is in no way a barrier to entry'.²¹⁵ Hanson considered that any new RMX competitor would simply be viewed as another customer and would not affect the dynamics of the customer base.²¹⁶
105. With regard to cross-sales, Hanson stated that there were only very limited cross-sales now that the various internalization processes had completed in the market. It also commented that whilst the CC noted the possibility of an increase in cross-sales in the event on an upturn in demand, it saw no evidence of an improvement in demand in the foreseeable future. It considered that a mandatory divestment of RMX sites to justify concerns regarding cross-supply would 'be overly onerous and disproportionate, and given the absence of cross supply in the new market would be both unnecessary and would do nothing of any effect in this respect'.²¹⁷
106. With regard to countervailing buyer power, Hanson considered that with some [55–70] per cent of bulk cement sold to the independent RMX and concrete products sectors, the RMX sector already had significant buyer power where independent RMX customers had multiple choices of supplier and the ability to switch, which showed that there was no need to improve the bargaining power of the independent RMX sector. Hanson also considered that it was the strength of countervailing buyer power that had led to importers taking their strong and growing market share from nothing in recent times. On this basis, Hanson considered that 'any mandatory RMX divestment would be disproportionate and without material effect, if it were carried out with the objective of increasing buyer power, since no material change would result from such a remedy with regard to such buyer power'.²¹⁸
107. Hanson also stated that it relied upon external customers for [55–70] per cent of its cement sales (the majority of which were RMX and concrete products customers).²¹⁹

²¹² *ibid*, paragraph 4.8.

²¹³ *ibid*, paragraph 4.17.

²¹⁴ *ibid*, paragraph 5.1.

²¹⁵ *ibid*, paragraph 5.3.1.

²¹⁶ [Hanson response hearing summary](#), 2 July 2013, paragraph 27.

²¹⁷ [Hanson response to the Remedies Notice](#), paragraph 5.3.2.

²¹⁸ *ibid*, paragraph 5.3.3.

²¹⁹ *ibid*, paragraph 5.3.4.

108. Aside from being disproportionate and lacking in effect on the perceived AEC, Hanson stated that this remedy ‘would undermine RCBs in the aggregates market’ which derived from vertical integration.²²⁰ Hanson explained that every tonne of concrete sold necessitated the sale of 2 tonnes of aggregate. Accordingly, any divestment of RMX sites by Hanson would be harmful to Hanson’s aggregates business.²²¹ Hanson stated that the RMX divestiture remedy would also ‘result in mothballing and closures of a commensurate proportion of Hanson’s aggregates sites, creating less supply and reducing competition in local aggregates markets, with less choice and higher costs resulting for the aggregates consumers’.²²²
109. Hanson also considered that some [30–45] per cent of Hanson’s cement sales were ‘in effect dependent upon the successes and failures at the level of its own downstream RMX business’ and if ‘Hanson’s footprint in RMX were in any way reduced, that same amount of dependent cement business would cease to be determined at the extremely competitive downstream level of RMX; and instead revert to the cement sales market itself, with a much smaller number of competitors’. Therefore Hanson considered that it would damage benefits to the end-customer if this ‘extremely competitive indirect channel/outlet for cement sales would be removed or diminished’.²²³ Hanson also noted that this remedy would ‘produce the unintended effect of leaving Hope as the new undisputed market leader in RMX (even if Hope did not purchase any of the divested assets),²²⁴ without the strong competition at the RMX level now afforded by the current market model’ and that ‘this could directly adversely affect what is now a very competitive and efficient RMX market operating on the lowest of margins, and so could prove damaging to customers at the RMX level and for the associated public interest’.²²⁵
110. With regard to the target VI ratio (see definition in Appendix 13.2, Annex E, paragraph 2(a)), Hanson noted that there was ‘enormous variance in the VI Ratios between the different GB majors’²²⁶ and as such ‘it would be artificial and incorrect to assume that there exists such a thing as an ideal VI ratio’.²²⁷ In terms of relevant customer benefits, Hanson also stated that a VI ratio would undermine significant efficiencies created by vertical integration and that the CC had not weighed its benefits into its decision.²²⁸
111. Hanson believed that any RMX plants that were divested from an existing, vertically integrated competitor would most likely be purchased by other established RMX players. However, from a practical perspective, Hanson considered that:

divestment of a package of RMX sites from a range of different companies, and indeed for the purposes of complementing a cement divestment from yet another company, would be an extremely burdensome and costly process. This would not merely be for any sellers in terms of arranging the necessary corporate and personnel structures and processes, but more significantly for the buyer, in terms of having to deal with a large number of separate assets and employees from several different sellers, causing problematic and costly integration hurdles.²²⁹

²²⁰ *ibid*, paragraph 5.5.

²²¹ *ibid*, paragraph 5.6.

²²² *ibid*, paragraph 5.7.

²²³ *ibid*, paragraph 5.8.

²²⁴ [Hanson response hearing summary](#), 2 July 2013, paragraph 30.

²²⁵ [Hanson response to the Remedies Notice](#), paragraph 5.9.

²²⁶ *ibid*, paragraph 5.15.

²²⁷ *ibid*, paragraph 5.17.

²²⁸ *ibid*, paragraph 5.21.

²²⁹ *ibid*, paragraph 5.22.

C3

112. In so far as an AEC did exist, Hanson considered that this remedy would be effective and proportionate.²³⁰
113. It believed that cement buying groups could attain a level of purchasing power and noted the existence of buying groups that existed in the packed cement business. However, it considered that there could be complications in respect of RMX given the need for a variety of materials (some quite specific) and the location and structure of silo capacity.²³¹
114. Hanson noted that the creation of cement buying groups could result in Hanson being able to supply groups that contained purchasers which it would otherwise not consider creditworthy.²³² It also noted that buyer groups had the advantage of being able to pool credit and structure better guarantee arrangements with banks, which could lead to more favourable pricing where this might otherwise be adversely impacted by worse credit risk for an individual customer.²³³
115. Hanson suggested that when considering this remedy, the CC should take into account the advantages which independent RMX operators could achieve through individual negotiation. It considered that RMX companies used quasi-tendering processes and/or the threat of switching to secure better terms, which pointed to the need for an 'opt-in' system.²³⁴ Hanson suggested that the CC should also consider 'the potential shortcomings of imposing a requirement on GB producers to sell a significant proportion of their cement production to any such buying group(s)' which 'would undermine the freedom and flexibility of cement producers, and the ability of independent RMX companies outside the buying group(s) to negotiate the best possible terms on an individualised basis'.²³⁵

C4

116. In so far as an AEC did exist, Hanson considered that this remedy would be effective and proportionate,²³⁶ although it did not agree with the CC that price announcement letters had the effect of facilitating price leadership, price following and softening customer resistance to price increases. Hanson believed the CC had 'not shown that the practice of sending price increase proposal letters is inconsistent with a well-functioning market'.²³⁷ However, Hanson conceded that 'any concerns which the Commission continues to hold would, in theory, be addressed by a prohibition on the issue of these generalized price increase proposal letters, since the opportunity to attempt to read national target increases would be reduced'.²³⁸
117. Hanson suggested that when considering this remedy, the CC should:
- (a) 'Acknowledge the need for cement producers to recover increased costs through price increases to current customers';²³⁹

²³⁰ *ibid*, Annex, paragraph 3.1.

²³¹ [Hanson response hearing summary](#), 2 July 2013, paragraph 32.

²³² *ibid*, paragraph 34.

²³³ *ibid*, paragraph 35.

²³⁴ [Hanson response to the Remedies Notice](#), paragraph 7.14.1.

²³⁵ *ibid*, paragraph 7.14.2.

²³⁶ *ibid*, Annex, paragraph 4.1.

²³⁷ *ibid*, paragraph 7.9.

²³⁸ *ibid*, paragraph 7.10.

²³⁹ *ibid*, paragraph 7.10.1.

- (b) 'Recognise the need for customers to have suitable advance notice of any price increases for business planning purposes (and that the current practice of sending out letters in advance to customers has arisen due to customer requirements)';²⁴⁰ and
- (c) 'Preserve the benefits to customers of a price proposal from a cement producer in advance which allows the customer to negotiate, seek other offers and, as the Commission has seen from its own analysis, secure a considerably more favourable deal for itself than that proposed'.²⁴¹
118. Hanson considered that this remedy 'should not prevent individualised proposals being sent to customers by cement producers (i.e. identifying only the new price to be paid by the customer) in order to commence a process of negotiation'.²⁴² It did not foresee any problems in individualizing its price announcement letters, as it viewed them merely as a starting point for negotiations. They also benefited customers as they allowed them to plan ahead.²⁴³
119. Hanson considered that personalized letters for cement would probably influence the cement substitutes market as well, due to products such as GGBS being intrinsically linked to cement. It did not see the need for such measures with regard to the substitute market, although it did not have any particular objections.²⁴⁴

C5

120. In so far as an AEC did exist, Hanson considered that this remedy would be effective and proportionate.²⁴⁵
121. It considered that a:
- three month time lag would very much reduce the level of any transparency which could in theory contribute to coordination. If a producer could not detect any changes in its own market share for three months, this could have the inevitable effect of reducing the alleged focus on market shares (as each party's own market share changes would be very much difficult to track and detect in a timely manner).²⁴⁶
122. Hanson considered that a time lag of three months would not unduly affect its planning. Whilst it received the data on a monthly basis, it sought to identify long-term trends in the data to see how the market was evolving in order to plan its budget and production efficiently. It saw nothing of value in single month data and believed that it was not in fact reliable.²⁴⁷ However, it considered that if the data was delayed for up to six months, it would be damaging to the industry's ability to allow efficient business and production planning.²⁴⁸
123. Hanson was concerned that restricting regional coverage of data would prevent it from making informed decisions regarding the logistics of its regional operations. Its

²⁴⁰ *ibid*, paragraph 7.10.2.

²⁴¹ *ibid*, paragraph 7.10.3.

²⁴² *ibid*, paragraph 7.11.

²⁴³ [Hanson response hearing summary](#), 2 July 2013, paragraph 36.

²⁴⁴ *ibid*, paragraph 38.

²⁴⁵ [Hanson response to the Remedies Notice](#), Annex, paragraph 5.1.

²⁴⁶ *ibid*, paragraph 7.5.1.

²⁴⁷ [Hanson response hearing summary](#), 2 July 2013, paragraph 39.

²⁴⁸ *ibid*, paragraph 40.

senior management had not realized that such regional cement data was available until the CC had informed Hanson of its existence.²⁴⁹

124. Hanson suggested that the CC should consider a suitable exceptions regime be put in place to allow for the provision of data where required by law or for other justified reasons.²⁵⁰

C6

125. In so far as an AEC did exist, Hanson considered that this remedy would be effective and proportionate.²⁵¹
126. It stated that EU ETS data was only of use to it in terms of determining what its carbon allocations would be for carbon credits. It did not use the data to analyse the market. It explained that it did make the information available externally in the form of sustainability reports and external statements, as various stakeholders were interested in Hanson's compliance.²⁵²
127. Hanson noted that this remedy option would make it more difficult for a GB cement producer to monitor its market shares and would introduce a considerable degree of further uncertainty into the market.²⁵³ However, it also noted that it required careful consideration and discussion with the European Commission and that environmental regulation was a complex and developing area of law.²⁵⁴

C7

128. Hanson did not agree that an AEC existed, but even if one did, it considered that remedy C7 would not be effective or proportionate.²⁵⁵
129. The Hanson section of this appendix has set out (above) Hanson's concerns regarding the three divestment remedies which are not repeated here. In addition to those concerns, Hanson stated that it had 'fundamental concerns over the procedure leading up to and following the publication of the provisional findings in respect of the analysis of GGBS and PFA'.²⁵⁶ For example, it considered that the CC's interest in GGBS and PFA was only indicated at a very late stage in the investigation,²⁵⁷ and the timing and lateness of the CC's focus on GGBS had meant that its analysis of GGBS and PFA was 'extremely rudimentary and superficial'.²⁵⁸ Hanson asserted that overall, procedural shortcomings on the part of the CC meant that the GGBS/PFA sectors had not been properly understood or analysed by the CC and Hanson had not had a proper opportunity to engage with the CC on GGBS. Therefore, Hanson believed that it 'would be unsafe to consider such extensive and intrusive remedies' under remedy C7.²⁵⁹
130. Hanson considered that there was no case for remedies in relation to GGBS on the basis that the CC had 'not established a credible, comprehensible or suitably detailed

²⁴⁹ *ibid*, paragraph 42.

²⁵⁰ [Hanson response to the Remedies Notice](#), paragraph 7.5.2.

²⁵¹ *ibid*, Annex, paragraph 6.1.

²⁵² [Hanson response hearing summary](#), 2 July 2013, paragraph 43.

²⁵³ [Hanson response to the Remedies Notice](#), paragraph 7.7.

²⁵⁴ [Hanson response hearing summary](#), 2 July 2013, paragraph 7.6.

²⁵⁵ [Hanson response to the Remedies Notice](#), Annex, paragraph 7.1.

²⁵⁶ *ibid*, paragraph 6.1.

²⁵⁷ *ibid*, paragraph 6.1.1.

²⁵⁸ *ibid*, paragraph 6.1.2.

²⁵⁹ *ibid*, paragraph 6.2.

case or analysis that any AEC arises in relation to GGBS'.²⁶⁰ In particular, it considered that the CC had underestimated and downplayed the significance of the PFA market and the considerable supply of PFA as an alternative to GGBS. It asserted that 'these products are clearly within the same cement substitute market, meaning that the Hanson share in this market has been incorrectly stated as very significantly greater than it is'.²⁶¹ Hanson also considered that the CC had underestimated and understated that role, scope and ability of both GBS and GGBS imports, in particular given the entry of HCM 'with its parent company's virtually unlimited access to the raw material granulate'.²⁶² It considered that the CC had 'rushed to assume dominant or even unilateral or monopoly market power for Hanson'.²⁶³ It also considered that the CC had not undertaken analysis of the stated detriment or perceived harm to competition of either the steel producers' exclusive slag supply arrangements with Lafarge Tarmac or Lafarge Tarmac's exclusive GBS supply arrangements with Hanson.²⁶⁴ In addition, the CC had not analysed the necessary efficiencies created by the exclusive supply arrangements,²⁶⁵ nor had it taken into account the 'enormous level of investments undertaken by Hanson'.²⁶⁶

131. Hanson considered that the CC was unable to impose its GGBS remedy due to the decision of the European Commission in the HeidelbergCement decision²⁶⁷ (noted above), and asserted that the CC was 'not empowered under the Enterprise Act to impose a remedy in relation to GGBS'.²⁶⁸
132. In respect of proportionality, Hanson considered that this remedy would 'be highly intrusive and costly' and a 'divestiture of one or more grinders would clearly involve [X] impairment losses',²⁶⁹ especially as GGBS grinder represented significant sunk costs.²⁷⁰ It considered that the remedy 'would be disproportionate in the light of the investments made, and risks taken, by Civil & Marine (and Hanson)' and 'would impair and remove Hanson's ability to make any return on the investment it made in the Civil & Marine business in 2006'.²⁷¹ It stated that 'without the grant of long exclusivity, Hanson would not have made these investments and/or taking the commitments/risks it did'.²⁷²
133. Regarding GGBS profitability, Hanson believed this should be considered in the context of the investment that had been made in the product and facilities. Its business was based on volumes, [X]. It considered that the risks were so significant, given the state of the steel market, that its investment return ought properly to reflect the risks that had been taken.²⁷³
134. Hanson considered that there was still a need for exclusivity due to the very uncertain future of the steel industry.²⁷⁴ It considered that the steel industry lacked

²⁶⁰ *ibid.*, paragraph 6.3.

²⁶¹ *ibid.*, paragraph 6.3.1.

²⁶² *ibid.*, paragraph 6.3.2.

²⁶³ *ibid.*, paragraph 6.3.3.

²⁶⁴ *ibid.*, paragraph 6.3.5.

²⁶⁵ *ibid.*, paragraph 6.3.6.

²⁶⁶ *ibid.*, paragraph 6.3.7.

²⁶⁷ *ibid.*, paragraph 6.14.

²⁶⁸ *ibid.*, paragraph 6.18.

²⁶⁹ *ibid.*, paragraph 6.29.

²⁷⁰ *ibid.*, paragraph 6.32.

²⁷¹ *ibid.*, paragraph 6.31.

²⁷² *ibid.*, paragraph 6.34.

²⁷³ [Hanson response hearing summary](#), 23 July 2013, paragraph 8.

²⁷⁴ [Hanson response hearing summary](#), 2 July 2013, paragraph 45.

stability, which resulted in an [redacted] supply of GBS.²⁷⁵ It also considered that [redacted] were the biggest issue for any potential purchaser.²⁷⁶

135. Regarding the GGBS contractual arrangements, [redacted].²⁷⁷ The clauses on Hanson with respect to the supply agreement included the requirement [redacted].²⁷⁸

136. Hanson believed that Tarmac clearly had an incentive to produce GBS rather than dispose of air-cooled residue as it was more profitable. [redacted], therefore if 2 tonnes of raw material only produced 1 tonne of GGBS, [redacted].²⁷⁹ Hanson confirmed its understanding that, under its contract, there were no circumstances in which Tarmac would be able to supply GBS to a third party in the UK for the production of GGBS.²⁸⁰

137. Hanson believed that the PFA market had grown²⁸¹ and that customers had a range of options, for example a customer could purchase imported GGBS, blend its own PFA or source PFA direction from a power station. Hanson stated that companies such as Aggregate Industries, Lafarge Tarmac and even some independents all imported GGBS now, and that small independent companies were also procuring PFA. As a result, Hanson's GGBS business had been significantly eroded in recent years. In respect of pricing, Hanson assessed the competitive threat against its product offering and priced accordingly.²⁸² Hanson noted that PFA was roughly two-thirds the price of GGBS. However, it stated that a tonne of PFA could not necessarily be substituted for a tonne of GGBS or a tonne of pure CEM, meaning that the effective prices per tonne for GGBS and PFA were very similar when taking into account the cost to produce a cubic metre of RMX.²⁸³ Hanson believed that the price of GGBS was in part driven by the cement price and therefore if the CC chose to levy a remedy for cement, that would therefore automatically become the remedy for GGBS.²⁸⁴

138. Hanson considered that there were numerous RCBs that the GGBS supply structure allowed,²⁸⁵ such as:

(a) the ability of Hanson to 'undertake the investment and make the commitment necessary to promote the benefits of GGBS'²⁸⁶ to include GGBS 'as a cement replacement with a lower environmental burden' which 'could not be guaranteed with a new entrant';²⁸⁷

(b) retaining a portfolio of plants [redacted];²⁸⁸

(c) the benefits bestowed upon the steel industry from the guaranteed offtake of waste slag,²⁸⁹ and

(d) Hanson's 'unique experience' and 'quality and reliability and security of supply' [redacted].²⁹⁰ Hanson considered that 'a break-up of GGBS operations would be likely

²⁷⁵ *ibid*, paragraph 44.

²⁷⁶ *ibid*, paragraph 50.

²⁷⁷ [Hanson response hearing summary](#), 23 July 2013, paragraph 21.

²⁷⁸ *ibid*, paragraph 22.

²⁷⁹ *ibid*, paragraph 23.

²⁸⁰ *ibid*, paragraph 26.

²⁸¹ *ibid*, paragraph 9.

²⁸² *ibid*, paragraph 10.

²⁸³ *ibid*, paragraph 11.

²⁸⁴ *ibid*, paragraph 20.

²⁸⁵ [Hanson response to the Remedies Notice](#), paragraph 6.38.

²⁸⁶ *ibid*, paragraph 6.39.1.

²⁸⁷ *ibid*, paragraph 6.39.3.

²⁸⁸ *ibid*, paragraph 6.39.2.

²⁸⁹ *ibid*, paragraph 6.39.4.

to risk the adverse effects of higher prices as the efficiencies of scale and supply security were lost and buyers then relied on smaller and less efficient operators'.²⁹¹

139. Hanson considered that there was an intricate link between where GBS and GGBS were produced, resulting in a difficulty separating the logistical relationship between the steel producer, the GBS producer and the GGBS producer.²⁹² Any divestiture would need to take account of the trading relationship between Tata Steel, Tarmac and Hanson and would need to make a distinction between selling a grinding plant and/or the granulator itself being sold. If a grinding facility was sold but the rest of the supply chain remained intact, there would be an inherent risk.²⁹³ Hanson explained that each plant had strengths and weaknesses, for example the [X].²⁹⁴
140. Hanson said that a clinker grinding plant could be modified to produce GGBS, but modifications would be necessary with respect to the drying process required for GGBS. While co-grinding (grinding cement from GBS at the same time to produce blended cement) to produce a higher quality output was possible, there were commercial considerations that made this considerably less attractive. Another consideration was the requirements for the storage of clinker which were different.²⁹⁵
141. Hanson considered that the Lafarge Tarmac proposed remedy was incapable of being an effective one, since a weakened GGBS offering could only create even greater business opportunity for cement.²⁹⁶

Z1

142. Whilst Hanson disagreed with the CC's theory of harm based on vertical integration,²⁹⁷ it proposed a remedy that it considered had 'the advantage of dealing with all the perceived aims of the RMX divestment remedy (Remedy C2)'.²⁹⁸ In essence, the proposed remedy imposed a 'requirement on those GB cement producers which are vertically integrated into RMX to conduct a tendering process (either by way of website invitation to tender, obtaining at least three quotations or by way of annual tender request) for the external supply of cement for RMX requirements'.²⁹⁹
143. Hanson suggested a number of safeguards be put in place, such as a requirement to select 'the most economically advantageous tender',³⁰⁰ 'a requirement to obtain a minimum number of quotes',³⁰¹ and 'a restriction on the delivery of information received from tendering suppliers within such process to eliminate transparency concerns by limiting the suppliers' delivery of such quotations to the relevant named procurement or RMX staff'.³⁰²
144. Hanson considered that this remedy would increase the size of the addressable market and facilitate expansion by producers outside the Top 3 GB cement pro-

²⁹⁰ *ibid*, paragraph 6.39.5.

²⁹¹ *ibid*, paragraph 6.40.

²⁹² [Hanson response hearing summary](#), 2 July 2013, paragraph 48.

²⁹³ [Hanson response hearing summary](#), 23 July 2013, paragraph 30.

²⁹⁴ *ibid*, paragraph 31.

²⁹⁵ *ibid*, paragraph 34.

²⁹⁶ *ibid*, paragraph 33.

²⁹⁷ [Hanson response to the Remedies Notice](#), paragraph 7.16.

²⁹⁸ *ibid*, paragraph 7.20.

²⁹⁹ *ibid*, paragraph 7.18.

³⁰⁰ *ibid*, paragraph 7.19.1.

³⁰¹ *ibid*, paragraph 7.19.2.

³⁰² *ibid*, paragraph 7.19.3.

ducers.³⁰³ It also considered that it would reduce perceived transparency between the Top 3 cement producers,³⁰⁴ eliminate the scope for cross-sales to be used to rebalance shares of sales,³⁰⁵ and restrict the opportunity to use such sales for the purposes of retaliatory or punishment actions with regard to any deviation from perceived coordination that may have been detected.³⁰⁶ In addition, it considered that this remedy would retain the efficiencies associated with vertical integration and that it represented a more proportionate and effective solution than a divestiture remedy.³⁰⁷

Z3

145. Hanson considered that although hypothetically it might be easier physically to divest a stand-alone clinker grinding plant, such a plant would need to be externally supplied with clinker from overseas. Accordingly, a purchaser would therefore more than likely be an established cement producer rather than an independent.³⁰⁸

MI/HCM

146. The CC did not receive a response specific to either its Remedies Notice or provisional findings. However, MI/HCM attended a response hearing at the CC on 24 June 2013 where it provided comments on the Remedies Notice.

C1

147. MI/HCM said that the CC should consider the relationship between geography and geology when it considered the divestiture of assets. It was concerned about the local/national picture.³⁰⁹
148. MI/HCM said that in relation to the acquisition of a divested cement plant, it would be important for any purchaser to have some form of downward vertical integration. In relation to the supply of aggregates, it would be possible to obtain aggregate supply, although it would not be optimal as there could be issues of quality. Another factor that had to be considered was the need for concrete plants to be reasonably close to cement works so as to limit haulage costs.³¹⁰
149. The divestiture of centrally located plants would be more beneficial. It would result in a central market with multiple competitors and would not result in the creation of local markets.³¹¹
150. It would be easier for a European player with existing supply chain capability—rather than a new entrant—to enter the UK market. [X]³¹²
151. A purchaser of a central cement plant [X] would be interested in rail links, longevity of asset in terms of limestone reserves plus any planning restrictions or opportunities.³¹³

³⁰³ *ibid*, paragraph 7.20.1.

³⁰⁴ *ibid*, paragraph 7.20.2.

³⁰⁵ *ibid*, paragraph 7.20.3.

³⁰⁶ *ibid*, paragraph 7.20.4.

³⁰⁷ *ibid*, paragraph 7.21.

³⁰⁸ [Hanson response hearing summary](#), 2 July 2013, paragraph 51.

³⁰⁹ [MI/HCM response hearing summary](#), paragraph 17.

³¹⁰ *ibid*, paragraph 18.

³¹¹ *ibid*, paragraph 19.

³¹² *ibid*, paragraph 20.

³¹³ *ibid*, paragraph 21.

152. [REDACTED]³¹⁴
153. In respect of latent capacity (mothballed plants), MI/HCM expected cement volumes in the market to grow from approximately [REDACTED] million tonnes per year in the UK. Latent capacity within an existing site would be less expensive to reinstate than an entire plant situated away from the centre of GB. MI/HCM did not believe that latent capacity should form part of the remedy package. However, it said that it would be material if a Major ordered to divest a central cement plant had other latent capacity proximate to it which could be brought back into operation.³¹⁵
154. It would not be a good idea to divest part of a cement plant, although MI/HCM considered that it would be possible to divest a grinding station to a player who could then import clinker and grind it.³¹⁶
155. The profile of an acquiring company was very important, particularly if it could internalize 50 per cent of production internally. In addition, MI/HCM considered it necessary that at least 80 per cent of the aggregates required formed part of the package.³¹⁷
156. MI/HCM did not have a strategy to acquire any divested assets but it did not feel it was reasonable for it to be excluded. Ultimately, the CC would take a view on which parties could acquire assets to be divested, and from MI/HCM's perspective, it would depend on the overall package.³¹⁸

C2

157. MI/HCM considered that a new buyer in RMX would be likely to buy close to where its plants were located. Access to the market was key and areas with a higher-density population would be most attractive.³¹⁹
158. MI/HCM considered that a significant number of RMX plants would have to be divested in order to generate cement buying power.³²⁰
159. The RMX market was a relatively easy market to enter, with low barriers to entry and where a significant number of small independents operated.³²¹
160. MI/HCM expressed the view that divestiture of stand-alone RMX plants might not be an effective remedy in itself and that, in any event, it might not be attractive to potential purchasers.³²²

C3

161. MI/HCM considered that there was no merit in this remedy; that competition in markets downstream from cement production was based on one competitor getting a better price than another, and if a buyer group was required, it would stifle downstream competition and would potentially increase the prices for the consumer.³²³

³¹⁴ *ibid*, paragraph 22.

³¹⁵ *ibid*, paragraph 23.

³¹⁶ *ibid*, paragraph 24.

³¹⁷ *ibid*, paragraph 25.

³¹⁸ *ibid*, paragraph 26.

³¹⁹ *ibid*, paragraph 27.

³²⁰ *ibid*, paragraph 28.

³²¹ *ibid*, paragraph 29.

³²² *ibid*, paragraph 30.

³²³ *ibid*, paragraph 31.

162. MI/HCM's view was that bigger players such as pre-casters would more likely than not purchase cement more cheaply than through a cement buying group.³²⁴
163. Regarding smaller purchasers, a cement buying group would be problematic with issues such as credit ratings, different products, different contractual terms etc.³²⁵

C4

164. MI/HCM had not sent price announcement letters to its customers. It preferred to deal with customers face to face and approached customers individually to discuss terms of business. MI/HCM did not consider it necessary to have to send price announcement letters to begin the price negotiation process.³²⁶
165. In the event that, for example, the aggregates levy increased (a cost which MI/HCM would pass through to its customers), MI/HCM considered it appropriate to send a blanket communication to its customers.³²⁷
166. MI/HCM did not agree that a spot price for cement on its website was a good idea. Its customers were happy dealing with it face to face.³²⁸
167. MI/HCM understood the issue around signalling. Whilst MI/HCM could see the customer benefit argument of receiving price increase letters, it considered the argument rather light. It also said that professional buyers could track government indices for price information. Its overall view was that it would not present any problem if generic price announcements were prohibited in relation to cement and GGBS and PFA.³²⁹
168. MI/HCM had received one price announcement letter [redacted] since January 2013.³³⁰
169. MI/HCM had a feel for the market price of cement through customer feedback although it had not been shown anything on paper.³³¹

C5

170. MI/HCM joined the MPA for a trial period of six months from 1 July 2013. It understood its relative size in the market and felt it wanted a body to fight European legislation on its behalf and that the MPA would better represent its interests in respect of politicians and health and safety.³³²
171. MPA data was not a particular factor behind MI/HCM's decision to join the MPA given that MI/HCM could readily obtain market data from BIS.³³³
172. MI/HCM planned to join the Construction Products Association at the end of 2013.³³⁴
173. MI/HCM accepted that a time lag of three months in respect of MPA data was fine. Even data that was a year old would be useful to some degree.³³⁵

³²⁴ *ibid*, paragraph 32.

³²⁵ *ibid*, paragraph 33.

³²⁶ *ibid*, paragraph 34.

³²⁷ *ibid*, paragraph 35.

³²⁸ *ibid*, paragraph 36.

³²⁹ *ibid*, paragraph 37.

³³⁰ *ibid*, paragraph 38.

³³¹ *ibid*, paragraph 39.

³³² *ibid*, paragraph 40.

³³³ *ibid*, paragraph 41.

³³⁴ *ibid*, paragraph 42.

C6

174. MI/HCM had not made any use of carbon emissions data, which it did not consider of interest.³³⁶

C7

175. MI/HCM did not find it difficult to source GGBS outside GB, although it was no different in economic terms from purchasing GGBS within GB. Ultimately, MI/HCM considered that it was preferable to use PFA which was more economical.³³⁷
176. MI/HCM could be interested in purchasing divested GGBS assets subject to cost, which would have to equate to the same as PFA. It would prefer to be in control of its cost base, meaning that acquiring both GBS and GGBS activities would be more attractive.³³⁸
177. MI/HCM considered that [✂].³³⁹
178. Economics of transport was a consideration.³⁴⁰

Z1

179. The cross-sales tendering remedy might result in another way of signalling.³⁴¹

Z2

180. In respect of the information barriers remedy, MI/HCM did not understand how it would work in practice or how effective it would be.³⁴²

Z3

181. MI/HCM did not have anything to add on the grinding plant divestiture remedy.³⁴³

Aggregate Industries

182. Aggregate Industries submitted a written response to the Remedies Notice and also attended a response hearing on 18 June 2013. In its written response it limited its comments to aspects of the remedies where it had sufficient market knowledge, given its position as a cement importer and customer rather than a GB cement producer.³⁴⁴

³³⁵ *ibid*, paragraph 43.

³³⁶ *ibid*, paragraph 44.

³³⁷ *ibid*, paragraph 45.

³³⁸ *ibid*, paragraph 46.

³³⁹ *ibid*, paragraph 47.

³⁴⁰ *ibid*, paragraph 48.

³⁴¹ *ibid*, paragraph 49.

³⁴² *ibid*, paragraph 50.

³⁴³ *ibid*, paragraph 51.

³⁴⁴ [Aggregate Industries response to the Remedies Notice](#), paragraph 1.3.

C1

183. Aggregate Industries considered that [REDACTED].^{345,346}
184. [REDACTED]^{347,348}
185. Unbundled divestments would be more attractive because of ease of integration and greater flexibility, although consideration would have to be given to how assets were bundled. In addition, bundled divestments could equate to a fairly large part of the GB cement production market, which would be quite challenging for an incumbent purchaser and were more risky. A cement plant bundled with RMX plants was less attractive for those potential purchasers who already operated RMX plants—[REDACTED].^{349,350}
186. Aggregate Industries considered that importers may be less able to operate an acquired cement plant given the level of technical competence required. However, such expertise could be present within the parent companies of some importers.³⁵¹
187. Significant investment would be required for a potential purchaser to acquire divested cement production capacity within GB. This would have to be benchmarked against alternative investment opportunities elsewhere in the world, and the GB market on the whole was currently less attractive than others.³⁵²
188. [REDACTED] A centrally located plant could give access to a large geographic part of the market, although good logistical support could improve the desirability of plants less centrally located. [REDACTED]³⁵³
189. There were some advantages and disadvantages in owning a single cement plant rather than two or more, and the importance of this largely depended on the strategic aspirations of the purchaser. [REDACTED]^{354,355}
190. The CC would have to be satisfied that a purchaser of a divested cement plant(s) had the operational expertise to run the plant(s) effectively. Aggregate Industries cited HCM as an organization that could have valuable learning from its acquisitions.³⁵⁶

C2

191. Aggregate Industries noted that the CC had found no AEC in the RMX market³⁵⁷ and that this remedy option was designed as a way to reduce the extent of the vertical integration between the Top 3 cement producers' cement and downstream operations.³⁵⁸ Aggregate Industries considered that the RMX market was already very competitive and barriers to entry were low.³⁵⁹ Furthermore, the entry into the GB

³⁴⁵ *ibid.*, paragraph 2.1.

³⁴⁶ [Aggregate Industries response hearing summary](#), paragraph 7.

³⁴⁷ *ibid.*, paragraph 8.

³⁴⁸ *ibid.*, paragraph 9.

³⁴⁹ *ibid.*, paragraph 10.

³⁵⁰ [Aggregate Industries response to the Remedies Notice](#), paragraph 3.2.

³⁵¹ [Aggregate Industries response hearing summary](#), paragraph 11.

³⁵² *ibid.*, paragraph 12.

³⁵³ *ibid.*, paragraph 13.

³⁵⁴ *ibid.*, paragraph 14.

³⁵⁵ *ibid.*, paragraph 15.

³⁵⁶ *ibid.*, paragraph 16.

³⁵⁷ [Aggregate Industries response to the Remedies Notice](#), paragraph 3.1.

³⁵⁸ *ibid.*, paragraph 3.2.

³⁵⁹ [Aggregate Industries response hearing summary](#), paragraph 18.

cement market by HCM and [REDACTED] would [REDACTED] be effective in increasing competition in this market.³⁶⁰

C3

192. Aggregate Industries considered that its concerns with this proposed remedy could be divided into two groups: (a) whether the remedy could in principle solve the AEC that the CC had identified; and (b) the practicalities of implementing and monitoring the remedy. It also considered that the remedy could have unintended, adverse consequences on the effectiveness of competition in the cement and RMX markets.³⁶¹
193. Aggregate Industries considered that the proposed remedy did little to increase the negotiating power of customers in the cement buying group on the basis that the number of cement suppliers remained unchanged.³⁶² It also considered that the remedy reduced the ability of cement suppliers to price discriminate, which could lead to price increases for all cement purchasers.³⁶³
194. From a practical perspective, Aggregate Industries was concerned that this remedy was unworkable. Issues that needed to be addressed included: (a) how administrative costs would be split between the members; how the costs of any bad debt associated with the cement buying group would be split; (c) how information received by the cement buying group on its members' likely requirements would be protected from anticompetitive disclosure; (d) how the cement buying group could ensure that it received the minimum volume guaranteed by cement suppliers; (e) how the cement buying group would design its tenders to avoid the risk of coordination in such an auction-type arrangement; and (f) what the cement buying group would do if it ended up with excess cement or insufficient quantities.³⁶⁴ Aggregate Industries also considered that prices charged by cement suppliers to the cement buying group may need to be monitored by the CC.³⁶⁵
195. Aggregate Industries considered that cement was not a commodity in that different types of cement had different applications. Accordingly, a tender process was more efficient because customers could specify precisely what they wanted and what they intended to use it for. There were also other criteria around consistency, availability and security of supply which were important factors for customers.³⁶⁶
196. [REDACTED]³⁶⁷ This remedy option also had the potential to facilitate coordination by customers in the CGB by (a) aligning the cost of their principal input; and (b) creating a forum for the discussion of key commercial decisions.³⁶⁸

C4

197. For the very limited volumes of cement that Aggregate Industries sold to third party customers, Aggregate Industries' policy was not to send price announcement letters.³⁶⁹ Paragon, Aggregate Industries' cementitious materials division, had in the

³⁶⁰ [Aggregate Industries response to the Remedies Notice](#), paragraph 3.2.

³⁶¹ *ibid*, paragraph 4.1.

³⁶² *ibid*, paragraph 4.4(a).

³⁶³ *ibid*, paragraph 4.4(b).

³⁶⁴ *ibid*, paragraph 4.6.

³⁶⁵ *ibid*, paragraph 4.5.

³⁶⁶ [Aggregate Industries response hearing summary](#), paragraph 21.

³⁶⁷ [Aggregate Industries response to the Remedies Notice](#), paragraph 4.4(c).

³⁶⁸ *ibid*, paragraph 4.8.

³⁶⁹ *ibid*, paragraph 5.1.

past provided price increase letters to its few external customers, but this practice stopped in 2012. Letters had tended to be tailored to individual customers.³⁷⁰

198. Aggregate Industries was a recipient of cement price increase letters. They were an indicator and a starting point for the negotiation process.³⁷¹ Aggregate Industries noted that the acquisition of cement was often a subcontract where an indication as to price was important to enable contractors to bid on projects for which the cement was a subcontracted input. It was therefore important that the practice was allowed to continue in some way.³⁷²
199. Aggregate Industries considered that the use of price announcement letters in general was an efficient way to communicate forecast increases in prices to customers. In turn, they enabled customers to plan ahead for increases in prices. Therefore, Aggregate Industries considered that price announcement letters gave rise to significant relevant customer benefits. Accordingly, it was not convinced about the effectiveness and proportionality of this remedy and opposed the prohibition of price announcement letters.³⁷³
200. If the CC were to proceed to implement this remedy, Aggregate Industries considered that it would probably work most effectively if it operated on a prohibition basis which would reduce transparency and, in turn, opportunities for coordination.³⁷⁴

C5

201. Aggregate Industries was not a cement producer and therefore had no clear, practical understanding of the current market data disclosure arrangements. As such, it could not comment on how the proposed remedy would affect behaviour in the market.³⁷⁵ It did not use MPA data for forecasting purposes as there were more relevant sources of information. Whilst the headline indicators were sometimes useful, it would not have a significant impact on Aggregate Industries if MPA data was unavailable.³⁷⁶

C6

202. Aggregate Industries did not make use of the EU ETS verified CO₂ data³⁷⁷ and had no clear, practical understanding of it, which rendered it unable to comment on how the proposed remedy would affect behaviour in the market.³⁷⁸

C7

203. In respect of the potential divestiture of GGBS and/or GBS plants, Aggregate Industries stated that it was not active in the production of either GGBS or GBS in GB, and on that basis, it did not consider itself well placed to comment on the effectiveness and/or proportionality of the possible divestiture remedies.³⁷⁹ [X] ³⁸⁰

³⁷⁰ [Aggregate Industries response hearing summary](#), paragraph 24.

³⁷¹ *ibid*, paragraph 22.

³⁷² *ibid*, paragraph 26.

³⁷³ [Aggregate Industries response to the Remedies Notice](#), paragraph 5.2.

³⁷⁴ [Aggregate Industries response hearing summary](#), paragraph 26.

³⁷⁵ [Aggregate Industries response to the Remedies Notice](#), paragraph 6.1.

³⁷⁶ [Aggregate Industries response hearing summary](#), paragraph 27.

³⁷⁷ *ibid*, paragraph 28.

³⁷⁸ [Aggregate Industries response to the Remedies Notice](#), paragraph 7.1.

³⁷⁹ *ibid*, paragraph 8.2.

204. In respect of the prohibition on exclusive GGBS and GBS arrangements, Aggregate Industries noted that there appeared to be a captive supply chain between GBS and GGBS where one could not be remedied without the other.³⁸¹ [REDACTED]³⁸²
205. Aggregate Industries imported GGBS from Holcim Germany.³⁸³ [REDACTED]³⁸⁴ Aggregate Industries had never encountered any difficulty obtaining GGBS from non-GB sources. It noted that the volume of GGBS ultimately depended upon the demand for steel, and currently there was overcapacity.³⁸⁵ It had also purchased GGBS from Hanson Heidelberg [REDACTED].³⁸⁶
206. Aggregate Industries had its own ash business which sourced PFA [REDACTED].³⁸⁷ Substitution had involved PFA rather than GGBS. It explained that PFA had colour propensities [REDACTED]. However, there were certain applications where Aggregate Industries customers specifically demanded GGBS and it would seek to satisfy customer demand, hence it still sourced some GGBS.³⁸⁸ [REDACTED]³⁸⁹

Z1

207. Aggregate Industries considered that a remedy requiring mandatory competitive tendering for the external supply of cement for RMX requirements was a potential way to address concerns arising from vertical integration. However, it noted that it could result in greater price transparency in the market.³⁹⁰

Z2

208. Regarding the remedy that proposed information barriers between cement and RMX divisions, Aggregate Industries considered that it could potentially address concerns over the competitive effects of vertical integration on the cement market. However, it believed it would not be effective in practice. It would be expensive to administer given the need for separate systems, individuals and parts of buildings and it was concerned that ultimately those costs would be passed through to the customer.³⁹¹

Z3

209. [REDACTED]³⁹²

CRH

210. The CC did not receive a response specific to either its Remedies Notice or provisional findings. However, CRH took part in a response hearing via telephone conference on 26 June 2013 where it provided comments on the Remedies Notice.

³⁸⁰ [Aggregate Industries response hearing summary](#), paragraph 32.

³⁸¹ *ibid.*, paragraph 32.

³⁸² [Aggregate Industries response to the Remedies Notice](#), paragraph 8.3.

³⁸³ [Aggregate Industries response hearing summary](#), paragraph 29.

³⁸⁴ *ibid.*, paragraph 29.

³⁸⁵ *ibid.*, paragraph 30.

³⁸⁶ *ibid.*, paragraph 31.

³⁸⁷ *ibid.*, paragraph 31.

³⁸⁸ *ibid.*, paragraph 33.

³⁸⁹ *ibid.*, paragraph 34.

³⁹⁰ *ibid.*, paragraph 37.

³⁹¹ *ibid.*, paragraph 36.

³⁹² *ibid.*, paragraph 17.

C1

211. CRH noted that as HCM had only been active for a few months, it was not yet possible to assess its impact on the GB market. Thus far HCM appeared to be competing actively for business so up to this point its divestiture appeared to have had an effect on competition. CRH's view was that cement prices in GB were competitive [REDACTED].³⁹³
212. If there were to be further divestitures of GB cement plants as a result of the CC's investigation, then CRH 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 CRH's board and shareholders would expect. In considering whether or not to bid for a plant, CRH would look at a number of factors including the plant's age, its efficiency (particularly in respect of energy costs), its location, proximity of mineral resources, transport links and compliance with environmental standards. The more modern and better located a given plant was, [REDACTED], the more likely CRH would be interested in it.³⁹⁴
213. Were a cement plant to be divested, CRH considered that it would wish the package of assets to include some RMX plants, so that the plant's cement production would have an outlet. It was also important that the divested plant owners should have access to a ready supply of aggregates. Wherever possible, shared sites (ie an RMX plant owned by one company but located in another's aggregates quarry) should not be included for divestiture as such sites were more problematic for purchasers.³⁹⁵

C2

214. RMX was a market with low barriers to entry. In CRH's experience, whenever an RMX market became very profitable, there would be a flood of entrants and the price of RMX and the returns on it would decrease. [REDACTED] Currently, CRH did not own any RMX operations in GB, though it did have a small precast concrete business.³⁹⁶
215. If the CC could increase the number of independent RMX producers by requiring the Top 3 vertically-integrated cement producers to sell some of their RMX plants to independents, then in principle this could benefit companies like CRH as they would have more customers to compete for. However, CRH was unsure as to who would be able to buy enough RMX plants to make this remedy viable.³⁹⁷

C3

216. CRH considered that the independent-minded nature of many independent RMX producers would make it difficult for them to work together. While it was possible to form buying groups for builders' merchants, because they were buying many different kinds of products, RMX producers were only buying cement and aggregates, so the dynamic was very different.³⁹⁸
217. Cement was traded in a different way from most other commodity products, so it would be difficult to devise a means of generating a spot price. Having a spot price

³⁹³ CRH response hearing summary, paragraph 10.

³⁹⁴ ibid, paragraph 11.

³⁹⁵ ibid, paragraph 13.

³⁹⁶ ibid, paragraph 14.

³⁹⁷ ibid, paragraph 15.

³⁹⁸ ibid, paragraph 16.

might also enable price manipulation and lead to a distortion of competition. Therefore this remedy might create as many problems as it solved.³⁹⁹

C4

218. Premier Cement (which is owned by CRH) did not currently send out price increase letters to its customers, so any proposed remedy in this respect would not affect it. It maintained regular contact with its customers by meeting them and keeping them informed about its proposed price increases and negotiating with them. It had never had any of its customers ask it to provide price increase letters.⁴⁰⁰

C5

219. CRH did not think that it was necessary to prohibit the publication of market data. The publication of data on a quarterly or six-monthly basis should enable interested parties to observe trends in the industry without raising any competition concerns.⁴⁰¹

C6

220. CRH did not believe that the publication of ETS data by the European Commission had affected competition or pricing in the cement market. It would be very difficult to work out information about specific companies from this data, and CRH noted that there had been no significant change in the market since this data had been routinely published.⁴⁰²

C7

221. CRH's businesses were not affected by the current arrangements in GB for the production of GBS and GGBS. CRH was not involved with GBS or GGBS production elsewhere, [redacted].⁴⁰³

Z1

222. From its perspective as an importer, CRH would welcome a requirement for cement producers to tender when they needed to buy cement from other producers. However, this would cause it some concern as price would become the only consideration for customers and would displace quality of service and security of supply, which were very important issues for cement producers when sourcing cement from outside their own businesses.⁴⁰⁴

Z2

223. CRH did not agree that RMX suppliers which were vertically integrated with cement producers should be prevented from receiving information, especially relating to cement prices, from elsewhere in their own company. In CRH's case, it required its

³⁹⁹ *ibid*, paragraph 17.

⁴⁰⁰ *ibid*, paragraph 18.

⁴⁰¹ *ibid*, paragraph 19.

⁴⁰² *ibid*, paragraph 20.

⁴⁰³ *ibid*, paragraph 21.

⁴⁰⁴ *ibid*, paragraph 22.

RMX business to make a profit, and they would not be able to do this effectively if they did not have all the information about their costs.⁴⁰⁵

Z3

224. As for divesting a grinding mill, the considerations for any purchasers would be similar to those which applied to cement plants (age, efficiency, location). CRH noted that the cost of electricity was higher in GB than in Spain and this, combined with the fact that GB was mainly a CEM I market, meant that for CRH it would be likely to be more cost effective to grind clinker where electricity was cheaper and export the cement to GB.⁴⁰⁶

Titan UK

225. The CC did not receive a response specific to either its Remedies Notice or provisional findings. However, Titan took part in a response hearing via telephone conference on 4 July 2013 where it provided comments on the Remedies Notice.

C1

226. Titan believed that there was a danger of unintended consequences in the divestiture of cement plants as divestitures could lead to local hotspots of competition. It was concerned that any new entrant would find itself competing strongly with the former incumbent for market share in the surrounding area. This type of intense localized competition could negatively affect other market participants in the area, such as cement importers, which were challenged by the peculiarities inherent in the importing business.⁴⁰⁷

227. [REDACTED]⁴⁰⁸

228. While divestitures of cement plants might promote competition between cement producers, they could potentially weaken competition from cement importers which might struggle to compete in a region where a divestiture had occurred.⁴⁰⁹

229. [REDACTED]⁴¹⁰

230. [REDACTED]⁴¹¹

C2

231. The divestiture of RMX plants could potentially have a positive effect on Titan's business depending on where the plants were located and depending on the number of plants divested. However, Titan suggested that cement producers which were required to divest RMX plants would probably compete for business from indepen-

⁴⁰⁵ *ibid.*, paragraph 23.

⁴⁰⁶ *ibid.*, paragraph 12.

⁴⁰⁷ [Titan response hearing summary](#), paragraph 9.

⁴⁰⁸ *ibid.*, paragraph 10.

⁴⁰⁹ *ibid.*, paragraph 11.

⁴¹⁰ *ibid.*, paragraph 12.

⁴¹¹ *ibid.*, paragraph 13.

dent RMX operators in order to make up for the loss of production taken by their former RMX plants.⁴¹²

232. [REDACTED]⁴¹³

233. [REDACTED]⁴¹⁴

234. The risk for a cement importer that acquired an RMX business was that, in doing so, it was effectively signalling to its current customers that it was now also a competitor. Therefore, any potential purchaser of RMX plants which also produced cement would have to evaluate the potential harm such integration might cause by alienating its existing customers. [REDACTED]⁴¹⁵

C3

235. It would be difficult to assess the impact that cement buying groups might have as it was almost impossible to predict how such groups might behave once they were set up. Also, Titan considered that it would be difficult to justify limiting the sales options of cement producers by restricting them to selling only to buying groups or requiring them to sell a specific percentage of their production to such groups.⁴¹⁶

C4

236. Titan understood the thinking behind the CC's proposals to require suppliers to send individualized letters to their customers and was content with such a remedy, but pointed out that there would need to be clear rules on what was permissible and what was not, and in any case suppliers still had to be able to communicate their pricing policy to their customers.⁴¹⁷

C5

237. Titan was not a member of the MPA. The only data that Titan saw was reproduced data about the size of the total UK market.⁴¹⁸

238. Titan used this data only to provide general information in its internal presentations of the total consumption of countries such as the UK, France or Italy. Such data was of limited competitive use to Titan and did not help in terms of its sales.⁴¹⁹

239. Titan did not submit any data to third parties in relation to its cement imports into GB. For this reason, Titan did not object to any remedy which might seek to delay the publication of data by the MPA.⁴²⁰

240. Titan did not make use of BIS data as it was not broken down company by company; rather it was a generic figure and only of interest in terms of gauging the level of consumption in the UK.⁴²¹

⁴¹² *ibid.*, paragraph 14.

⁴¹³ *ibid.*, paragraph 15.

⁴¹⁴ *ibid.*, paragraph 16.

⁴¹⁵ *ibid.*, paragraph 17.

⁴¹⁶ *ibid.*, paragraph 18.

⁴¹⁷ *ibid.*, paragraph 20.

⁴¹⁸ *ibid.*, paragraph 21.

⁴¹⁹ *ibid.*, paragraph 22.

⁴²⁰ *ibid.*, paragraph 23.

C6

241. Titan did not regard carbon emission data to be of any commercial value as it was essentially historical. The data was only used in assessing how national plants allocated CO₂ rights.⁴²²
242. Titan said that there was some benefit in terms of the transparency of the EU ETS scheme for competitors in that it gave them visibility of how rights had been allocated.⁴²³

C7

243. Titan was unable to comment on remedies relating to GGBS as it was not involved in this aspect of the market, either in GB or in any of the other countries where it operated.⁴²⁴

Z1

244. Titan did not consider that proposals to require the major cement producers to conduct an open tendering process when they needed to buy cement would make the overall cement market more competitive. In theory this proposal seemed fine but in practice it could alert other competitors to the fact that the producer concerned was struggling to supply its customers through its regular channels.⁴²⁵

Z3

245. Titan thought that the divestiture of a grinding station was not a particularly practical remedy. For instance, a producer could choose to close down small operations in order to move to a more efficient plant at a different location, but nevertheless retain the grinding station in the original location so as to supply clinker to it and retain market presence. Titan felt that forcing a producer to divest a grinding station would be an unwarranted interference with the GB producer's legitimate ability to structure its business in a cost-efficient way.⁴²⁶

CPV (Dragon Alfa)

246. The CC did not receive a response specific to either its Remedies Notice or provisional findings. However, CPV (Dragon Alfa) took part in a response hearing via telephone conference on 9 July 2013 where it provided comments on the Remedies Notice.

C1

247. CPV's view was that if there were more cement producers in the GB market then there would be more competition.⁴²⁷

⁴²¹ *ibid.*, paragraph 24.

⁴²² *ibid.*, paragraph 25.

⁴²³ *ibid.*, paragraph 26.

⁴²⁴ *ibid.*, paragraph 19.

⁴²⁵ *ibid.*, paragraph 29.

⁴²⁶ *ibid.*, paragraph 28.

⁴²⁷ [CPV response hearing summary](#), paragraph 10.

248. The creation of HCM as a result of the CC's remedies in the Anglo–Lafarge JV had led to lower prices in the northern part of Dragon Alfa's market, particularly in the area surrounding HCM's rail terminal in Reading.⁴²⁸

249. [REDACTED]⁴²⁹

250. CPV did not have a view on whether or not it would be necessary to include some RMX plants as part of the divestment of a cement plant or plants remedy.⁴³⁰

C2

251. Asked what the effect might be on competition, or on CPV as an importer, if Hanson or Cemex or Lafarge Tarmac were required to divest a number of their concrete plants, Dragon Alfa did not think having more RMX plants outside of the ownership of the main cement producers would particularly benefit it, as it tended not to supply the large type of RMX plants operated by the cement producers, although it might benefit other participants in the market.⁴³¹

252. Dragon Alfa considered it unlikely that it would gain business if a mid-tier producer (Brett Group or Breedon Aggregates) owned more RMX plants but lacked cement production capacity. [REDACTED]⁴³²

253. [REDACTED] operating RMX plants would not fit within [REDACTED] simple business model of buying and distributing bulk cement.⁴³³

C3

254. Dragon Alfa's customers were small, independent operators which larger producers found unattractive to serve. The service that it offered to its customers was as important as its prices. This included offering timed deliveries which were attractive to small operators. Large buying groups were all about low prices and this would not be attractive to Dragon Alfa.⁴³⁴

255. As a remedy, the creation of a cement buying group or groups could have the unintended consequence of being anticompetitive. In the past it had been asked to pay to join buying groups before it could gain access to the members of the group. It was not interested in participating in buying groups of this type. Its experience of buying groups was that they had precluded potential customers from considering it as a supplier and that this was a common situation.⁴³⁵

C4

256. The sending of generalized price announcement letters had been a long-standing practice in the cement industry and the letters seemed to be sent on a very regular basis.⁴³⁶

⁴²⁸ *ibid.*, paragraph 11.

⁴²⁹ *ibid.*, paragraph 12.

⁴³⁰ *ibid.*, paragraph 13.

⁴³¹ *ibid.*, paragraph 14.

⁴³² *ibid.*, paragraph 15.

⁴³³ *ibid.*, paragraph 16.

⁴³⁴ *ibid.*, paragraph 17.

⁴³⁵ *ibid.*, paragraph 18.

⁴³⁶ *ibid.*, paragraph 19.

257. Price announcement letters provided an indication of what the cement producers wanted to achieve, although the increases proposed did not realistically reflect what actually happened in the market. Price announcement letters provided Dragon Alfa with an idea of what it should be doing with its own prices. It had used generalized price announcement letters it had received in negotiations with its own customers.⁴³⁷
258. It had tended to personalize its price announcement letters rather than send generalized ones. It had actually abandoned any form of price increase letter for nearly three years. It now looked at each of its customers separately and made individual proposals to them. This had helped it secure long-term relationships with its customers and reflected the current challenging state of the market rather than the situation before the downturn.⁴³⁸

C5

259. Dragon Alfa did not use MPA data in the running of its business. It did find the data interesting and did use the MPA's statistics in order to compare its business performance with the market. Dragon Alfa did not know how accurate the MPA data was but it seemed to suggest Dragon Alfa was in a reasonably good position in the market.⁴³⁹
260. Dragon Alfa used the regional breakdown of cement sales volumes data. This was because it was based in the South-West which was a small market and so it was easy to see how well it was performing against that data.⁴⁴⁰
261. Dragon Alfa tended to look at the data on a quarterly basis. Therefore, a three-month publication time lag would have no impact on it. Rather than rely on MPA data to plan its business, Dragon Alfa tended to have an ear to the ground.⁴⁴¹

C6

262. Dragon Alfa did not use EU ETS data. It did not believe that the ETS currently had any material effect on its business but considered that it might do in future through requirements for construction projects to meet carbon targets.⁴⁴²

C7

263. Dragon Alfa's view was that the fact that supplies of GBS and GGBS were controlled by a limited number of parties was unlikely to be beneficial to the overall market and that there were likely to be competition issues arising from this. Dragon Alfa did not supply PFA or GGBS to customers. Its RMX customers and concrete producers supplied and blended their own PFA or GGBS.⁴⁴³
264. CPV noted that its cement blended particularly well with PFA. Whilst the price of GGBS could affect the number of users of PFA, there were also technical reasons why customers might choose to use PFA instead of GGBS.⁴⁴⁴

⁴³⁷ *ibid*, paragraph 20.

⁴³⁸ *ibid*, paragraph 21.

⁴³⁹ *ibid*, paragraph 22.

⁴⁴⁰ *ibid*, paragraph 23.

⁴⁴¹ *ibid*, paragraph 24.

⁴⁴² *ibid*, paragraph 25.

⁴⁴³ *ibid*, paragraph 26.

⁴⁴⁴ *ibid*, paragraph 27.

265. Dragon Alfa could not comment on whether the CC should intervene at both the upstream (GBS) and downstream (GGBS) level.⁴⁴⁵

266. [REDACTED]⁴⁴⁶

Z1

267. Regarding the proposed remedy of requiring major cement producers to enter into a tendering process when they wanted to purchase cement from other parties (cross-sales), Dragon Alfa said that it had had very little involvement with cement producers and had only done a small amount of business with Aggregate Industries. It did not consider that this remedy would significantly affect its business.⁴⁴⁷

Z3

268. As for the proposal of divesting a grinding station, Dragon Alfa did not know the difference between the cost of importing clinker and the cost of importing cement and could offer no comment.⁴⁴⁸

Breedon Aggregates

269. The CC did not receive a response specific to either its Remedies Notice or provisional findings. However, Breedon Aggregates attended a response hearing at the CC on 8 July 2013 where it provided comments on the Remedies Notice.

C1

270. A divestiture of a cement plant by one of the Top 3 would have to increase competition to some degree. However, as there were already four cement producers and a number of importers active in the GB market, Breedon Aggregates was unsure whether the introduction of a fifth producer would make a significant difference to the degree of competition. It might be that the problems with competition were caused by reasons other than the number of participants in the market.⁴⁴⁹

271. In respect of the differences between HCM and Tarmac, Breedon Aggregates said that Tarmac had been virtually 100 per cent vertically integrated, so it had only a small requirement to sell cement externally. HCM was less vertically integrated, so it would need to sell more cement into the market and would therefore be a more active competitor than Tarmac.⁴⁵⁰

272. Breedon Aggregates considered that the following matters were important when considering whether to buy a cement plant:

- (a) the plant would need to be connected to the rail network so it could reach as many customers as possible;

⁴⁴⁵ *ibid*, paragraph 28.

⁴⁴⁶ *ibid*, paragraph 29.

⁴⁴⁷ *ibid*, paragraph 30.

⁴⁴⁸ *ibid*, paragraph 31.

⁴⁴⁹ [Breedon Aggregates response hearing summary](#), paragraph 6.

⁴⁵⁰ *ibid*, paragraph 7.

- (b) there should be access to in-house concrete production so that there was a guaranteed purchaser for some (say around 10 to 15 per cent) of the plant's output; and
- (c) the plant should be reasonably sized so that economies of scale could be obtained, and it should have access to sufficient mineral reserves to ensure its long-term operation.⁴⁵¹

273. Breedon Aggregates was not a cement producer and was unfamiliar with the respective merits of the various cement plants in GB. [redacted]⁴⁵²
274. As noted above, a purchaser without any RMX capability would perhaps need to acquire some RMX plants. Building an RMX business from scratch could take some time. A purchaser which already had an RMX business of its own would find that this would be much less of an issue. It should be relatively straightforward, especially for an existing RMX producer, to acquire more plants and increase the scale of its business to accommodate production from an acquired cement plant. The biggest risk would be the losses which the RMX business would be likely to sustain for the first couple of years. If a purchaser acquired a stand-alone cement plant, it would be easy for it to acquire RMX plants independently as the barriers to entry in the RMX market were low. An RMX plant could be acquired for £200,000. Breedon Aggregates noted that the margins on concrete were low and therefore it would be risky for a purchaser to take a significant number of RMX plants together with a cement plant.⁴⁵³
275. Breedon Aggregates would be interested in acquiring a cement plant, particularly if the plant did not have future risks attached to it such as access to mineral reserves and emissions issues. Breedon Aggregates already had its own aggregates and RMX businesses so would not need a divestment to include RMX plants. It would be unlikely to consider building a new plant or acquiring a site with planning permission for a plant as it would be difficult for it to justify the costs involved.⁴⁵⁴

C2

276. Breedon Aggregates considered that limiting the amount of cement that producers could sell to their own RMX business, or the RMX operations of the other Top 3 cement producers, to, say, 10 per cent would be likely to have the consequence of making cement producers compete harder for external customers. Cement producers would also be likely to scale back their RMX capability. It could also lead to a more profitable RMX sector as it might be that the price of RMX was currently suppressed because the major cement players took profit upstream in their cement businesses which made it difficult for independent RMX firms to be profitable. It could also lead to the creation of more, and larger, independent RMX producers. However, the consequences were difficult to predict.⁴⁵⁵
277. Large contractors which needed security of supply would need to be confident of the technical back-up behind their RMX supplier, and they would probably be inclined to go to an RMX supplier with multiple plants in order to lessen risk.⁴⁵⁶

⁴⁵¹ *ibid*, paragraph 8.

⁴⁵² *ibid*, paragraph 9.

⁴⁵³ *ibid*, paragraph 10.

⁴⁵⁴ *ibid*, paragraph 11.

⁴⁵⁵ *ibid*, paragraph 12.

⁴⁵⁶ *ibid*, paragraph 13.

278. Careful consideration would need to be given to what would be the correct VI ratio for cement to RMX plants for a cement producer. For example, Lafarge Tarmac was already relatively less vertically integrated than other major producers. It might be necessary for different ratios to apply to different producers, and in particular Breedon Aggregates noted that it would be unfair for HCM suddenly to have to comply with a VI ratio of 10 per cent as it had just acquired its RMX business.⁴⁵⁷
279. RMX production required a lot of overhead and was a 'high volume, low margin business'. RMX divestitures would not be attractive to Breedon Aggregates unless they were situated near to its aggregates facilities. Even in a key market within the M25, Breedon Aggregates would not consider buying RMX plants unless it could supply them. [X] ⁴⁵⁸
280. Requiring the divestiture of RMX plants could lead to a reduction in capacity if the purchasers which acquired them discovered that it was a challenging business and did not work hard at keeping their RMX businesses going.⁴⁵⁹

C3

281. The cement buying group remedy was unattractive to Breedon Aggregates. It was happy with how it currently purchased cement and felt it did not need the leverage that might follow from joining a cement buying group. Such groups might be beneficial for smaller cement purchasers not only in terms of lowering prices but also getting over credit risk issues. Having said that, Breedon Aggregates also stated that small independent purchases might not be paying significantly more for cement than bigger ones. Breedon Aggregates considered that a cement buying group could provide different specifications of cement as required.⁴⁶⁰
282. There was currently no cement spot price, partly because the price of cement varied regionally. If a spot price was published, it would be likely to result in those paying more than the spot price to renegotiate. Breedon Aggregates considered that a spot price would ultimately simply be a 'common average price' and would be of little value as its experience of the construction materials business had been that prices were usually individually negotiated on a deal-by-deal basis.⁴⁶¹

C4

283. A move away from cement producers sending generalized price announcement letters (ie showing increases in terms of £ per tonne) in place of personalized ones (showing specific price figures) would be logical. Generalized price announcement letters signalled intent and could be seen as a way of producers signalling to each other. If personalized letters contained prices specific to a particular customer, both buyer and seller would want that letter to remain confidential, and this would, in turn, reduce price transparency. Breedon Aggregates also considered that cement suppliers would be more likely to insert a lower number in a personalized letter and that there would be less scope for negotiation over prices.⁴⁶²
284. It said that it could not see the customer benefit in receiving generalized price announcement letters. It purchased all its cement from Lafarge, Cemex and Hanson

⁴⁵⁷ *ibid*, paragraph 14.

⁴⁵⁸ *ibid*, paragraph 15.

⁴⁵⁹ *ibid*, paragraph 16.

⁴⁶⁰ *ibid*, paragraph 17.

⁴⁶¹ *ibid*, paragraph 18.

⁴⁶² *ibid*, paragraph 19.

but all prices were ultimately negotiated one to one. It would prefer to receive a personalized letter from a particular cement supplier when it was a natural point of the relationship to discuss price rather than receive a generalized price announcement letter along with every other purchaser of cement.⁴⁶³

285. Breedon Aggregates said that in this respect GGBS should be treated the same way as cement.⁴⁶⁴

C5

286. Breedon Aggregates used MPA data as an indication of what the market was doing both regionally and nationally. Breedon Aggregates did not receive any detailed cement data as it was not a cement producer. However, it did receive national cement headline data.⁴⁶⁵

287. A lag in the publication of cement data would not present Breedon Aggregates with any problems. Cement suppliers would always try to find out, by whatever means, what their market share was as it was important to them, but a three-month delay in the publication of MPA data would make this more difficult.⁴⁶⁶

C6

288. Breedon Aggregates did not look at EU ETS data and had no concerns about its publication.⁴⁶⁷

C7

289. In respect of GBS divestitures, Breedon Aggregates considered that it would be better to divest all three GBS production facilities to one company in order to limit the risk of a company acquiring one GBS plant and the local steelworks then closing down, which would result in the GBS plant having no supply of slag. For this reason, divestment of a single GBS plant might be unattractive to purchasers.⁴⁶⁸

290. The GGBS facilities could be divested to any of the existing cement producers (other than Hanson) but divestment to HCM as a new entrant might encourage more competition. If GGBS production was divested to a party independent of cement producers, then this independent would be likely to compete vigorously against cement producers.⁴⁶⁹

291. Breedon Aggregates currently purchased GGBS from Hanson. Breedon Aggregates would be interested in acquiring GGBS capacity subject to price and the long-term security of supplies from the steel industry.⁴⁷⁰

⁴⁶³ *ibid*, paragraph 20.

⁴⁶⁴ *ibid*, paragraph 21.

⁴⁶⁵ *ibid*, paragraph 22.

⁴⁶⁶ *ibid*, paragraph 23.

⁴⁶⁷ *ibid*, paragraph 24.

⁴⁶⁸ *ibid*, paragraph 25.

⁴⁶⁹ *ibid*, paragraph 26.

⁴⁷⁰ *ibid*, paragraph 27.

Z1

292. Breedon Aggregates did not consider that cross-selling of cement between the producers was contributing to any lessening of competition, so it did not regard a remedy requiring the Majors to tender for these supplies to be necessary. It also did not consider it likely that any such remedy would be effective.⁴⁷¹

Z2

293. Breedon Aggregates did not consider that any remedy restricting the flow of information about cement prices within the cement producers' internal organizations would be effective.⁴⁷²

Z3

294. Breedon Aggregates would not be interested in acquiring a stand-alone grinding station as it would have to import clinker. However, it could see this remedy being attractive to an independent with access to clinker.⁴⁷³

Brett Group

295. The CC did not receive a response specific to either its Remedies Notice or provisional findings. However, Brett Group attended a response hearing on 1 July 2013 where it provided comments on the Remedies Notice.

C1

296. Brett Group supported a decoupling of cement from both RMX and other integrated manufacturing operations. There was little value in the creation of another cementer with some integrated RMX. It would be preferable to divest a stand-alone cement plant or a cement plant with a low level of integrated capacity as this would create a cement producer with an interest in selling beyond its own operations.⁴⁷⁴
297. Up to now, out of the four incumbent cement producers only Lafarge had really shown a consistent interest over a sustained period in supplying Brett Group. This was because Lafarge produced more cement than it could sell through its own RMX operations.⁴⁷⁵
298. By itself, Brett Group did not have the financial resources to acquire a divested cement plant. It might consider doing so as part of a JV, but it would need to ensure that it had the right expertise to manage a cement-producing operation and the plant's location would need to align with Brett Group's other construction materials interests.⁴⁷⁶
299. As Brett Group was not familiar with the location, dynamics, reserves or cost bases of the various GB cement plants, it was unable to assess which was the most attrac-

⁴⁷¹ *ibid*, paragraph 28.

⁴⁷² *ibid*, paragraph 29.

⁴⁷³ *ibid*, paragraph 30.

⁴⁷⁴ [Brett Group response hearing summary](#), paragraph 6.

⁴⁷⁵ *ibid*, paragraph 7.

⁴⁷⁶ *ibid*, paragraph 8.

tive divestment. It noted that planning consent had been granted for a cement plant in the Medway in Kent. [REDACTED]⁴⁷⁷

300. Brett Group hoped that any divested cement plants would be acquired by companies it considered 'credible', as cement plants were large operations and customers needed them to be operated reliably, so any company running one would need a good track record. [REDACTED]⁴⁷⁸
301. The two most interesting dynamics were (a) the number of players; and (b) their willingness and interest in supplying Brett Group. The current number of cement producers could address the AEC. The fact that they were so vertically integrated meant that they were generally less interested in supplying Brett Group. [REDACTED]⁴⁷⁹
302. Brett Group was concerned to read in the provisional findings that Lafarge Tarmac was the prime divestiture candidate, [REDACTED] current supply arrangements with Lafarge Tarmac. Requiring Lafarge Tarmac to divest cement production capacity could mean that it would be more interested in supplying its own RMX business and less interested in supplying companies like Brett Group. The concept of three or four barely interested cementers worried Brett Group. [REDACTED]⁴⁸⁰

C2

303. The more cement a cementer had to sell on the open market, the better [REDACTED]. As cementers became more vertically integrated, they were less interested in supplying independents. [REDACTED] An RMX divestiture would have the effect of incentivizing Cemex and Hanson to be more interested in supplying independents.⁴⁸¹
304. Brett Group would be interested in acquiring a number of divested RMX plants subject to having the necessary management capacity and the location of the plants being divested in relation to its aggregates facilities and the addressable market. [REDACTED] In this way, if Brett Group could purchase cement competitively, it could add value to [REDACTED] its [REDACTED] aggregates.⁴⁸²

C3

305. Brett Group's understanding was that this remedy was intended to result in increased buyer power in the cement market. However, it took a long-term perspective about building knowledge, relationships, contracts and long-term strategy in order to leverage the best cement prices for itself. [REDACTED]⁴⁸³
306. [REDACTED] wanted control over the type of cement it purchased which was driven by a range of criteria including customer specifications. It needed discretion over who it dealt with. Overall, it was not in favour of this remedy.⁴⁸⁴

⁴⁷⁷ *ibid*, paragraph 9.

⁴⁷⁸ *ibid*, paragraph 10.

⁴⁷⁹ *ibid*, paragraph 11.

⁴⁸⁰ *ibid*, paragraph 12.

⁴⁸¹ *ibid*, paragraph 13.

⁴⁸² *ibid*, paragraph 14.

⁴⁸³ *ibid*, paragraph 15.

⁴⁸⁴ *ibid*, paragraph 16.

C4

307. Brett Group explained that generalized cement price increase announcement letters assisted it when negotiating contract prices with its customers, where some supply agreements lasted in excess of 12 months. These letters enabled it to revert to its customers and negotiate price increases.⁴⁸⁵
308. As a purchaser of cement, it did not put much credence behind the proposed price increases in cementers' price announcement letters, and it negotiated directly (face to face) with cementers.⁴⁸⁶
309. Brett Group did not recognize the problems identified by the CC in connection with sending generalized cement price announcement letters. It found them helpful for the professional procurement manager and it expected to be written to by suppliers with regard to prices going forward. It would not present any problems if suppliers wrote to Brett Group in more personal terms.⁴⁸⁷

C5

310. Brett Group made use of cement data and considered it an important part of its knowledge from a procurement perspective [REDACTED]. Whether cement volumes were up or down were important signals and it could get this from MPA/BIS data. However, it was unable to assess which firms had lost volume from the data. Nevertheless, it could determine this anecdotally.⁴⁸⁸
311. Brett Group gained competitive leverage from the data when added to other market intelligence, including various market studies which it used to review the market, and it kept its ear to the ground regarding market developments.⁴⁸⁹
312. If MPA data was available after a lag of three months, that would not fundamentally affect the value derived from the data, although there was a point where it became historic. The sooner it could obtain the data, the greater the advantage.⁴⁹⁰

C6

313. Brett Group did not make use of the EU ETS data and was unfamiliar with it.⁴⁹¹

C7

314. Brett Group imported GGBS for its own consumption. The fact that there was a monopoly in the domestic supply of GGBS in GB was a reason for importing GGBS, [REDACTED]. Having the terminal allowed it to import GGBS. [REDACTED]⁴⁹²
315. GGBS was very well known as a cement replacement in GB. Brett Group had been buying GGBS since the 1980s. It preferred GGBS over PFA as: (a) PFA supply into the South-East could be limited, and (b) it worked better in its RMX plants as PFA

⁴⁸⁵ *ibid*, paragraph 17.

⁴⁸⁶ *ibid*, paragraph 18.

⁴⁸⁷ *ibid*, paragraph 19.

⁴⁸⁸ *ibid*, paragraph 20.

⁴⁸⁹ *ibid*, paragraph 21.

⁴⁹⁰ *ibid*, paragraph 22.

⁴⁹¹ *ibid*, paragraph 23.

⁴⁹² *ibid*, paragraph 24.

had different handling characteristics. In addition, GGBS concrete was well known and accepted by customers in the South-East, outside of London.⁴⁹³

316. Brett Group would prefer to deal with a number of competing suppliers of GGBS within GB. It considered that the domestic monopoly in GGBS allowed its supplier to sell GGBS at a price which, while below that of CEM I, tracked the CEM I price in order to ensure that GGBS sales volumes were maintained.⁴⁹⁴

Z1

317. Brett Group did not see any merit in the third party competitive tender process remedy.⁴⁹⁵

Z2

318. Brett Group did not see how the information barriers remedy could be implemented practically. It would be preferable to reduce the number of RMX plants owned by cement producers.⁴⁹⁶

Z3

319. [REDACTED]⁴⁹⁷

[A mid-tier aggregates and RMX producer]

320. [REDACTED] said that it had reviewed the provisional findings and Remedies Notice. It did not provide detailed comments on the provisional findings or Remedies Notice with the exception of the proposed remedy C3, the creation of a cement buying group or groups.

C3

321. [REDACTED] did not consider that remedy C3 was justified and queried the basis for it. It stated that the AEC that remedy C3 sought to address (a lack of countervailing buyer power on the part of cement purchasers) was not fully articulated in the provisional findings. It considered that the other remedies which required divestments and restrictions on supplier conduct (remedies C1, C2 and C4) plus publication restrictions (C5 and C6) would together address the AEC and correctly focus on the structure and behaviour of the suppliers.⁴⁹⁸
322. [REDACTED] stated that remedy C3 was not reasonable, effective or proportionate.⁴⁹⁹ From a practical perspective, it considered that the implementation, monitoring and administration requirements of such a buying group or groups 'would be considerable and disproportionately burdensome'.⁵⁰⁰ It also commented that remedy C3 was unduly invasive and had the potential to distort the prevailing competitive conditions.⁵⁰¹

⁴⁹³ *ibid*, paragraph 25.

⁴⁹⁴ *ibid*, paragraph 26.

⁴⁹⁵ *ibid*, paragraph 27.

⁴⁹⁶ *ibid*, paragraph 28.

⁴⁹⁷ *ibid*, paragraph 29.

⁴⁹⁸ [REDACTED] [response to the Remedies Notice](#), paragraph 2.1.

⁴⁹⁹ *ibid*, paragraph 2.2.

⁵⁰⁰ *ibid*, paragraph 2.5.

⁵⁰¹ *ibid*, paragraph 2.6.

Furthermore, it considered that buying groups raised potential competition law issues and that 'compulsory membership would be highly invasive and interventionist'.⁵⁰²

F E Gilman

323. F E Gilman submitted a written response to the CC's provisional findings and Remedies Notice. The written response commented on the following proposed remedy options.

C1 & C2

324. Divestitures were essential. Cement producers must be separated from cement users. Divestitures would be much simpler for the cementitious side of the Top 3 cement producers, given the extent to which they were vertically integrated, rather than for their RMX and precise concrete sides.⁵⁰³

C7

325. Each of the Top 3 cement producers should divest itself of every one of its GB cement, slag and ash interests.⁵⁰⁴

Z3

326. In respect of the small number of cement, cement clinker grinding, slag and ash plants involved, each production plant should be acquired by a new player in a manner that ensured that any single cement/slag/ash player owned, controlled or managed not more than one plant location.⁵⁰⁵

[A small producer]

327. The CC did not receive a response specific to either its Remedies Notice or provisional findings. However, [X] sent an email to the CC, attaching an earlier email in November 2012 setting out concerns in relation to the Lafarge–Tarmac JV divestments to HCM which [X] considered still very relevant today.

[An independent RMX producer]

328. [X] responded to the provisional findings and Remedies Notice with reference to its trading experience following new entrants to the cement and GGBS markets which appeared to have increased competition and reduced the prices paid for materials by [X]. However, it did not provide any specific comments on the individual remedies.
329. In respect of CEM I, [X] considered that HCM's presence in the market had reduced the purchase price. Prior to HCM entering the market, [X] purchased CEM 1 from [a cement importer] at £[X] per tonne. HCM quoted £[X] and ultimately [X] secured a price of £[X] with [a cement importer]. In addition, [a GB cement producer] and [a

⁵⁰² *ibid*, paragraph 2.9.

⁵⁰³ [F E Gilman response to the Remedies Notice](#), paragraph 3.

⁵⁰⁴ *ibid*, paragraph 4.

⁵⁰⁵ *ibid*, paragraph 5.

GB cement producer] separately cold-called [X] with quotes that were unusually competitive.⁵⁰⁶

330. In respect of GGBS, [X] stated that Hanson had held a monopoly for the supply of GGBS in GB ever since it purchased Civil and Marine. In 2012, [X] could purchase GGBS from Hanson at £[X] per tonne ex works plus haulage at £[X] per tonne, giving a total of £[X]. In May 2012, [X] offered [X] Spanish GGBS at £[X] delivered. In June 2012, [X] negotiated with [X] for the supply of German GGBS at £[X] per tonne delivered. In August 2012, a Hanson rep verbally offered GGBS ex works at £[X] per tonne (subject to manager approval) and apparently commented that previously higher rates reflected Hanson's position in the market at that time as the sole supplier of GGBS. Hanson ultimately quoted a delivered price of £[X] per tonne fixed until the end of 2013.⁵⁰⁷
331. [X] concluded that the reduction in the prices of both CEM I and GGBS when new suppliers entered the market showed that these markets had not been operating correctly and had resulted in higher prices. [X] encouraged the CC to take action to improve competition in these markets.⁵⁰⁸

Department for Business, Innovation and Skills

332. BIS provided a response to the Remedies Notice which was restricted to remedy C5, restrictions on the disclosure of cement market data by the UK Government and by GB cement producers to private sector organizations. BIS did not comment on whether it agreed or disagreed with the AECs identified by the CC. BIS also attended a teleconference response hearing on 8 July 2013.

C5

333. The Construction Market Intelligence team, located in the Analysis Directorate of BIS, was responsible for publishing a range of statistics on building materials and components. This was done through a regular monthly publication titled *Monthly Statistics of Building Materials and Components*, which was made publicly available through its website.⁵⁰⁹ Table 8 of that publication included statistics on monthly cement production and sales in GB plus figures for cementitious materials (GGBS and PFA), clinker and estimates of cement imports. The information was received from an accountancy firm, which collected data from cement-producing firms on behalf of the MPA. Bessler Hendrie aggregated the data and then passed it to the MPA and BIS.⁵¹⁰
334. Prior to 2007, the information published in Table 8 was collected by BIS's predecessor organization, the Department for Trade and Industry (DTI), from UK cement producers.⁵¹¹ Data was previously published by the DTI three months in arrears. In 2007, the British Cement Association (BCA) asked Bessler Hendrie to collect the data from cement producers. The BCA subsequently decided to publish the data one month in arrears and the DTI followed suit.⁵¹²

⁵⁰⁶ [X] [response to the Remedies Notice](#), p1.

⁵⁰⁷ *ibid*, p2.

⁵⁰⁸ *ibid*.

⁵⁰⁹ [BIS response to the Remedies Notice](#), paragraph 3.

⁵¹⁰ *ibid*, paragraph 4.

⁵¹¹ *ibid*, paragraph 7.

⁵¹² *ibid*, paragraph 8.

335. The data was used primarily for market and economic information by government and industry bodies, including construction trade associations.⁵¹³ BIS investigations indicated that cement data was a good predictor of construction output.⁵¹⁴ Brick and cement deliveries appeared to be the most reliable predictors of construction output and therefore BIS did not wish to omit cement from its forecasting model.⁵¹⁵
336. BIS considered that if the data was embargoed for longer than one month, no forecasting model would be able to use it.⁵¹⁶ Cement data published three months in arrears would be useless for forecasting purposes because cement production led output by about a month.⁵¹⁷ From a practical perspective, BIS considered it unproblematic to revert to publishing the data three months in arrears. However, there would be little point in publishing data with a greater time lag or in less detail as its utility would be diminished.⁵¹⁸ BIS said that it could not use cement data that was six months old for forecasting construction market performance.⁵¹⁹
337. If given access to data with an embargo, BIS stated that it would be treated as confidential data under the Code of Practice for Official Statistics whereby only named individuals would be allowed pre-publication access in exceptional and unusual circumstances and upon signing a strict non-disclosure agreement.⁵²⁰
338. BIS could not foresee any circumstances where disaggregated data needed to be provided to third parties except for the purpose of aggregation as in the case of the MPA's firm of accountant's arrangement with the MPA.⁵²¹
339. If the CC recommended that this remedy be adopted, BIS would immediately cease publication of the next month's cement data and would wait three months before publishing it.⁵²²

Department of Energy & Climate Change

340. DECC submitted a response to the Remedies Notice which focused on remedy option C6: recommendations to the UK Government/European Commission on the publication of GB cement producers' verified emissions data under the EU ETS. DECC also attended a teleconference response hearing on 11 July 2013.

C6

341. DECC stated that the annual EU ETS emissions data was useful to the cement sector and provided 'significant public policy benefits from the transparent publication of the data across the EU'. In particular, the data enabled viewers to track developments across Europe.⁵²³ DECC considered that the CC had not set out a strong enough case for prohibiting the publication of the EU ETS emissions data and that the other remedies set out in the Remedies Notice, in particular those that directly addressed the ability to coordinate, were likely to be more effective than a ban on

⁵¹³ [ibid](#), paragraph 9.

⁵¹⁴ [ibid](#), paragraph 10.

⁵¹⁵ [BIS response hearing summary](#), paragraph 2.

⁵¹⁶ [BIS response to the Remedies Notice](#), paragraph 11.

⁵¹⁷ [BIS response hearing summary](#), paragraph 5.

⁵¹⁸ [BIS response to the Remedies Notice](#), paragraph 12.

⁵¹⁹ [BIS response hearing summary](#), paragraph 2.

⁵²⁰ [BIS response to the Remedies Notice](#), paragraph 13.

⁵²¹ [ibid](#), paragraph 14.

⁵²² [BIS response hearing summary](#), paragraph 8.

⁵²³ [DECC response hearing summary](#), paragraph 16.

data publication.⁵²⁴ DECC said that ‘even if the publication of EU ETS data contributed to the creation of the AEC in the cement market provisionally identified by the CC, the benefits obtained from publishing the data outweighed any detrimental effects’.⁵²⁵

342. DECC explained that EU ETS emission figures were made publicly available by the European Commission on the first working day after the 31 March deadline for reporting annual EU ETS emissions. Making the data available to all as soon as possible prevented those with the ability to make accurate estimates of the emissions data from having an unfair advantage in the carbon market. In addition, some member states could not restrict access to the data due to freedom of information legislation. Therefore, a coordinated release of the emissions data was implemented.⁵²⁶
343. DECC was concerned that recommendations such as aggregating data could set a precedent for other industry sectors and this could potentially thwart the ability of the public from assessing how the EU ETS was delivering emission reductions at installation level which had been published since 2007.⁵²⁷ In any case, DECC stated that it was not clear that the EU ETS data was the only source of information in the UK that cement producers could use to make inferences about production volumes and market shares.⁵²⁸
344. Aside from the public policy concerns, DECC considered that there would be some legal practicability issues involved if the remedy was implemented to include amendments to EU legislation.⁵²⁹ The impact of implementing this particular remedy would require a qualified majority of member states to amend the Registries Regulation and the agreement of the European Parliament and the Council of the EU in response to a proposal from the European Commission in respect of the ETS Directive.⁵³⁰ Information requests for this data under the Environmental Information Regulations (which implemented the EU Directive on public access to environmental information⁵³¹) meant that there was a statutory duty on public authorities to make environmental information such as emissions data available on request.⁵³²
345. DECC considered that a delay in the publication of the data would not be as problematic as a total prohibition,⁵³³ although any delay in publication would have to be the same across the EU which would involve practical difficulties.⁵³⁴ DECC also considered that a recommendation by the CC for a delay in the publication of cement data might well lead to other industry sectors involved in EU ETS to argue for similar treatment.⁵³⁵

⁵²⁴ [DECC response to the Remedies Notice](#), paragraph 2.

⁵²⁵ [DECC response hearing summary](#), paragraph 2.

⁵²⁶ [DECC response to the Remedies Notice](#), paragraph 3.

⁵²⁷ *ibid*, paragraph 4.

⁵²⁸ *ibid*, paragraph 5.

⁵²⁹ Article 15A of the amended ETS Directive states that: ‘Member States and the Commission shall ensure that all decisions and reports relating to quantity and allocation of allowances and to the monitoring, reporting and verification of emissions are immediately disclosed in an orderly manner ensuring non-discriminatory access. Information covered by professional secrecy may not be disclosed to any other person or authority except by virtue of the applicable laws, regulations or administrative provisions’. In addition, the Registries Regulation 2013 states that by virtue of Article 109 the Central Administrator shall make available information referred to in annex XIV to members of the public via the EU Transaction Log which is the EU-wide database through which all Registry transactions take place. Article 1(e) of annex XIV specifies that the EU Transaction Log shall provide to the public ‘the verified emissions figure, along with its corrections for the installation related to the operator holding account for year x shall be displayed from the 1 April onwards of year (x81)’.

⁵³⁰ [DECC response to the Remedies Notice](#), paragraph 9.

⁵³¹ [2003/4/EC](#).

⁵³² [DECC response to the Remedies Notice](#).

⁵³³ [DECC response hearing summary](#), paragraph 5.

⁵³⁴ *ibid*, paragraph 6.

⁵³⁵ *ibid*, paragraph 11.

OFT

346. The nature and proportionality of the proposed remedies in the cement market ought to be viewed in light of the OFT's 2011 market study into aggregates and also:
- (a) the £180 million detriment⁵³⁶ to buyers over five years identified by the CC in its provisional findings (which had subsequently been revised);
 - (b) the fact that conditions seemed to exist in the market which could result in outright collusion and therefore, arguably, a higher level of detriment unless remedial action was taken; and
 - (c) the fact that new entry to the market by means other than acquisition of divested plant was virtually impossible due to planning constraints and high start-up costs.
347. There is strong justification for the proposed divestiture remedies. While the divestiture remedies should go a long way to remedying the AEC the CC has identified, divestments alone would not be enough. Behavioural remedies were also required in order to minimize the risk of collusion.

C1

348. The CC should consider the minimum plant sizes required for a sustainable cement plant operation and whether divestiture would cause any loss of economies of scale, the benefits of which were previously passed on to customers in the form of lower prices (although the CC's investigation would suggest that it was unlikely that such benefits were being passed on).
349. Divestiture alone would not remedy the AEC. Tacit collusion might be possible with a larger number of competitors as it was among three.
350. Divestiture would be more effective if the businesses to be sold off were able to operate almost immediately after sale as stand-alone businesses with their own set of customers and orders to fulfil. The OFT agreed with the other points about the cement divestiture.
351. The extent to which latent production capacity should be required to be divested ought to depend in part on where this production capacity was.

C2

352. The divestiture of RMX plant capacity would probably have to be at such a level so as to increase the size of the addressable market such that there would be a real increase in overall competition for the supply of cement through encouraging more suppliers to compete for the business and make better use of their plants. This should inform the Target VI ratio.

⁵³⁶ Further work on customer detriment has been carried out since the publication of the provisional findings and provisional decision on remedies, which is set out in Appendix 8.6 for the customer detriment in cement, and in Appendix 8.7 for the customer detriment in GGBS.

C3

353. Whilst cement buying groups could increase buyer power, divestments were likely to have the same effect. There were competition law considerations with this proposed remedy, for example conditions of joining that might require members to buy a particular quantity of cement via the cement buying group and restrictions on members purchasing cement elsewhere. There were also administration issues. It was noted that cement buying groups had not emerged naturally. Nevertheless, they might be worth investigating further.

C4

354. The OFT expected customers to be told in advance about price changes (rises or reductions) or change in pricing policy. This was necessary for them to be able to plan ahead in their purchase and use of cement, and to be able to make well-informed decisions on whether to terminate the contract and switch supplier.
355. The definition of 'price announcement' should be wide and encompass notifications about changes in either or both actual prices and pricing structure. A prohibition of forms and content of communications rather than a template was also preferred.
356. In respect of monitoring compliance, it would be too resource intensive for the OFT to carry out frequent checks of cement suppliers or to impose a requirement that all price announcements were copied to the OFT. A better alternative would be to rely on complaints about the practice or whistleblowers.

C5

357. If the data published were older, there was less risk of it being used to lead prices and dampen competition. However, the OFT offered no view on what the time lag should be.

C6

358. The OFT could not provide a view on the merits of this remedy as it had insufficient information. It acknowledged that the CC had consulted the team in the European Commission handling the Article 101 enquiries into the cement sector. The OFT considered that there would probably need to be a strong case for treating UK data differently from other EU countries' data.

C7

359. There were risks if the CC required the three GBS facilities to be under separate ownership. The sale of two or three to one entity might ensure a better chance of continuity of supply if operations ceased temporarily or permanently at some of the steelworks. If all three plants were sold to one operator, it would result in 'a total monopoly merely being transferred from one enterprise to another without the prospect of opening up the market to competition'.
360. In respect of GGBS, the OFT considered that 'there might be more scope to require Hanson to sell all or some of its five GGBS manufacturing plants to independent operators' which could increase the visibility of GBS prices in the supply chain and possibly expose the GGBS sector to some competition from overseas.

The Directorate-General for Climate Action

361. The Directorate-General for Climate Action (DG Clima) did not submit a response to the Remedies Notice. However, it did attend a meeting with members of the CC in Brussels on 25 June 2013. The focus of the discussion was remedy C6: recommendations to the UK Government/European Commission on the publication of GB cement producers' verified emissions data under the EU ETS.

C6

362. DG Clima explained that transparency was a feature that was widely present in environmental legislation due to the policy benefits of transparency and that the publication of verified emissions data was prescribed by legislation.^{537,538}

363. DG Clima explained that the rationale behind the publication of the EU ETS data included:

(a) the policy benefits of transparency; enabling the public and interested third parties (such as NGOs, financial analysts and those active in the carbon markets, for example [X]) to see the effectiveness of the EU ETS in reaching its policy objectives (and, in the case of analysts, contributing to the efficient running of the carbon markets); and

(b) the aim of facilitating compliance in reducing carbon emissions.⁵³⁹

364. The relevant data was published by the European Commission on the next working day after it was provided to the European Commission by installations on 31 March each year. The data was accessible by each of the 28 member states plus the three countries belonging to the European Economic Area European Free Trade Association.⁵⁴⁰ Installations submitting data to the European Commission had one month from 31 March to surrender their relevant allowances equivalent to their emissions. By publishing the data within one working day of receiving it, no company should be able to gain an advantage when trading allowances in advance of submission of allowances to the EU.⁵⁴¹

365. There were detailed rules stipulating how the data should be recorded and verified. The public could request verified emissions data (to include installation level data) from national authorities (the Environment Agency in the case of GB) and also from the European Commission.⁵⁴²

366. DG Clima considered that remedy C6 was incapable of being implemented because:

(a) A delay in publication by the European Commission would not prevent the information being obtained elsewhere (as had been the case when there was a six-week delay in publication prior to 2006). A publication delay would also be considered disproportionate on the basis that only ten of the 10,000 CO₂-emitting

⁵³⁷ Note of meeting, paragraph 2.

⁵³⁸ http://ec.europa.eu/clima/policies/ets/documentation_en.htm; its genesis dates back to the Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters (signed 25 June 1998 and implemented in the EU and member states through Directive 2003/4). It further confirmed that the European Court of Justice (Case 524/09 *Ville de Lyon v Caisse des dépôts et consignations* <http://curia.europa.eu/juris/liste.jsf?language=en&num=C-524/09>) which held that data classified as 'environmental information', such as reports of emissions, had to be published, but certain exemptions applied to 'trading data' relating to emission allowances.

⁵³⁹ Note of meeting, paragraph 3.

⁵⁴⁰ *ibid*, paragraph 4.

⁵⁴¹ *ibid*, paragraph 6.

⁵⁴² *ibid*, paragraph 5.

installations across the EU were GB cement plants yet the remedy would affect all 10,000 installations.

- (b) The application of the equal treatment principles would prevent GB cement producers being excluded from the ambit of the legislation.
- (c) There was significant value in the data which in particular enabled benchmarking.
- (d) Aggregating cement emissions data with emissions data from other industries would not be desirable as it would not provide useful information on the environmental impact of each industry in isolation.⁵⁴³

Tata Steel

367. Tata Steel submitted a response to the Remedies Notice which focused on remedy C7: structural measures to address the AEC in relation to GGBS/GBS production in GB. Tata Steel also attended a response hearing at the CC on 18 July 2013.

C7

368. [REDACTED]⁵⁴⁴

369. Tata Steel contracted with Lafarge Tarmac for the removal, processing and sale of blast furnace slag, steel slag and other slags. The processing of these slags were [REDACTED].⁵⁴⁵

370. Tata Steel considered that the exclusive nature of its contracts with Lafarge Tarmac was a necessary and essential feature given that:

- (a) Large-scale investment was necessary, meaning that a GBS processor required security of supply of slag over time in order to justify and recover investment.
- (b) The process of treating the slag necessitated that slag-cooling facilities were within close proximity to the blast furnaces (both facilities at Scunthorpe and Port Talbot were on site).

(c) [REDACTED]

(d) [REDACTED]

(e) [REDACTED]⁵⁴⁶

(f) [REDACTED], if the CC were to conclude [REDACTED], Tata Steel suggested that an owner must operate multiple sites. It also proposed criteria that the CC should consider in respect of the suitability of a purchaser of GBS plants:

- (i) any new owner be independent of the steel industry;
- (ii) it should have appropriate expertise and knowledge;

⁵⁴³ *ibid*, paragraph 7.

⁵⁴⁴ [Tata Steel response to the Remedies Notice](#), paragraph 2 under the heading '(i) Provisional Findings in the GBS and GGBS markets'.

⁵⁴⁵ *ibid*, paragraph 3 under the heading '(i) Provisional Findings the GBS and GGBS markets'.

⁵⁴⁶ *ibid*, paragraph 4 under the heading '(i) Provisional Findings in the GBS and GGBS markets'.

(iii) it should have the financial investment in the assets and continued capacity expenditure; and

(iv) ability to demonstrate a long-term commitment to the divested entity.⁵⁴⁷

371. The contracts [redacted]⁵⁴⁸ which ran until 2029.⁵⁴⁹

372. [redacted]^{550,551}

373. [redacted]⁵⁵²

374. In terms of timescale, Tata Steel considered that if divestments were required at either GBS or GGBS level, that these took place at the earliest possible opportunity or, failing that, within the CC's standard six months.⁵⁵³

375. [redacted]^{554,555}

Sahaviriya Steel Industries UK

376. SSI submitted a written response and attended a telephone response hearing on 21 August 2013. Its comments were limited to remedy C7.

C7

377. SSI explained that the volume of slag produced was dependent on the volume of iron produced. Therefore, the exact slag production figures would vary. As a rule of thumb, for each tonne of iron made, approximately 200 to 300 kg (or 20 to 30 per cent) of slag was produced.⁵⁵⁶

378. SSI noted that there was no reference to Hanson's mothballed grinding plant located at Redcar.⁵⁵⁷

379. It said that the market had for some time been tightly controlled through very long-term contracts and specialization by single companies at various stages of the supply chain. It stated that it 'would therefore welcome the arrival of further outlets and processors and thus more competition at each stage of the supply chain'.⁵⁵⁸

380. Regarding the exclusive supply arrangements between Lafarge Tarmac and Hanson, SSI did not know what the exact arrangements were other than what had been disclosed during the CC's inquiry. [redacted]^{559,560} It considered that more demand would be

⁵⁴⁷ *ibid*, under the heading '(e) What criteria should be applied to the consideration of purchaser suitability for: (i) GBS plants'.

⁵⁴⁸ [Tata Steel response hearing summary](#), paragraph 35.

⁵⁴⁹ *ibid*, paragraph 29.

⁵⁵⁰ [Tata Steel response to the Remedies Notice](#), paragraph 1 under the heading 'a) Is it necessary to intervene at both the upstream and downstream levels in order to achieve an effective remedy to this AEC?'

⁵⁵¹ *ibid*, paragraph 2 under the heading 'a) Is it necessary to intervene at both the upstream and downstream levels in order to achieve an effective remedy to this AED?'

⁵⁵² *ibid*, paragraph 1 under the heading 'd) If we chose to require divestitures at both upstream and downstream levels, should the same operator be permitted to purchase both a GBS and GGBs plant?'

⁵⁵³ *ibid*, paragraph 1 under the heading '(i) What timescale should be allowed for the implementation of any divestiture the CC may require?'

⁵⁵⁴ *ibid*, paragraph 2 under the heading '(ii) What arrangements should be put in place for holding separate the operations to be divested from those that will be retained and for monitoring any such provisions?'

⁵⁵⁵ *ibid*, paragraph 1 under the heading 'g) Under what circumstances should the CC appoint a divestiture trustee?'

⁵⁵⁶ [SSI response to the Remedies Notice](#), paragraph 3.

⁵⁵⁷ *ibid*, paragraph 3.

⁵⁵⁸ *ibid*, paragraph 5.

⁵⁵⁹ [SSI response hearing summary](#), paragraph 35.

created for GGBS if there were a freer market with more players in it. It said that very few businesses had the kind of security derived from the agreement between Lafarge Tarmac and Hanson.⁵⁶¹

381. SSI considered that ownership of the plants itself did not restrict competition; it was the exclusive supply contracts that did. It believed that ownership of the GBS plants sat best with the owners of the blast furnaces. However, separating ownership of the processing plants from the buyers of the raw materials would assist in increasing competition.⁵⁶²
382. SSI viewed the granulator as being very much an integral part of the overall blast furnace operation and therefore considered it inappropriate to be owned by a third party. [§] ⁵⁶³ It considered that ownership of GBS plants was not important from a remedy or competition perspective. From an operational perspective, SSI wanted to own the granulation plant itself. It considered that an effective remedy would come in the form of opening up the market. It took the view that if it could only sell its slag to one entity, that entity had the upper hand in the negotiation.⁵⁶⁴
383. SSI considered that there needed to be several GGBS plants and suggested as many as the number of owners of GBS plants. It also thought it important that moth-balled GGBS plants were included in the divestiture process and new owners of them were encouraged to compete.⁵⁶⁵ It considered that separation of production at the upstream and downstream levels would enhance competition.⁵⁶⁶
384. In respect of GBS plant ownership, SSI considered that no third party (ie a non-blast furnace operator) would be suitable as an owner. In respect of GGBS plant ownership, SSI considered that GGBS operators should be independent of the GBS operators and the cement producers. It was concerned that if the plant were merely shuffled around among the existing players, there was a strong likelihood that the AEC would continue.⁵⁶⁷
385. SSI considered that the divestiture process should be swift and, on that basis, trusteeship should be unnecessary.⁵⁶⁸

International Small Business Alliance

386. The CC did not receive a response specific to either its Remedies Notice or provisional findings. However, Seamus May sent an email to the CC on 14 June 2013 attaching the following documents:
 - (a) International Small Business Alliance (ISBA) Draft Report for the OFT on the 'Structures and Behaviours of the UK Cement, Concrete and Aggregates Sector' (prepared for the BAA);
 - (b) BAA report 'Undisclosed Prices';
 - (c) ISBA comments on the Anglo/Lafarge merger; and

⁵⁶⁰ SSI response to the Remedies Notice, paragraph A.

⁵⁶¹ SSI response hearing summary, paragraph 36.

⁵⁶² SSI response to the Remedies Notice, paragraph B.

⁵⁶³ *ibid*, paragraph 5.

⁵⁶⁴ SSI response hearing summary, paragraph 38.

⁵⁶⁵ SSI response to the Remedies Notice, paragraph C.

⁵⁶⁶ *ibid*, paragraph D.

⁵⁶⁷ *ibid*, paragraph E.

⁵⁶⁸ *ibid*, paragraph F.

(d) ZEW paper 'Concrete Shoes for Competition—the effect of the German Cement Cartel on Market Price'.

387. ISBA welcomed the CC's provisional findings and agreed that there were 'very significant structural and behavioural problems'.⁵⁶⁹
388. In respect of the proposed remedies, ISBA considered that 'further analysis is required in relation to both foreclosure and margin squeeze effects, arising from the degree of vertical integration enjoyed by the [Majors]. Effective remedies require that the underlying analysis is thorough and it does seem that this may not fully be the case in regard to the concrete products market'.⁵⁷⁰
389. With regard to RMX, ISBA considered that Majors typically had a second plant within range or had reciprocal cross-supply arrangements in place with other Majors and 'in reality, the majority of independents only have access to the bread and butter RMX market, eg housing and aggregates'. It also stated that 'the potential margin squeeze and threats to continuing cement supplies have been a very significant deterrent to new market entrants or to expansion by existing concrete producers' and that 'margin squeeze over the long term tends to eliminate independent RMX producers'.⁵⁷¹
390. With regard to cement, ISBA considered that
- the ring of cement import terminals around the UK that are controlled by Major cement producers, either with cement production capacity in the UK or not, are an elaborate attempt to create an illusion of competition when in reality, a quota system operates from country to country so as to give then effect of the free movement of cement across transnational borders.⁵⁷²

MPA

391. The MPA provided a written response to the Remedies Notice confined to remedy C5. It also attended a teleconference response hearing on 17 July 2013.

C5

392. The remedy was a disproportionate way of addressing the AEC and was inconsistent with past EU/UK authority decisional practice.⁵⁷³
393. The MPA did not believe that, in relation to dissemination of identical market data from the same source, a different remedy should be implemented for private sector organizations such as the MPA, as opposed to government departments and public sector bodies such as BIS.⁵⁷⁴ In particular, restricting access to market data except via a government source would stifle market analysis and innovation.⁵⁷⁵
394. In the absence of evidence demonstrating any clear nexus between the use of the MPA data and the coordination concerns raised by the CC, prohibiting cement pro-

⁵⁶⁹ [ISBA response to the Remedies Notice](#), p1.

⁵⁷⁰ *ibid*, p1.

⁵⁷¹ *ibid*, p2.

⁵⁷² *ibid*, p3.

⁵⁷³ [MPA response to the Remedies Notice](#), paragraph 1.2.

⁵⁷⁴ *ibid*, paragraph 1.3.

⁵⁷⁵ *ibid*, paragraph 1.4.

ducers from submitting sales and volume data to the MPA was disproportionate and unjustified.⁵⁷⁶

395. The MPA would be prepared to consider a longer time lag provided it struck a reasonable balance between competition considerations and legitimate benefits that all users derived from publication of the data.⁵⁷⁷

Independent Buying Consortium

396. The Independent Buying Consortium (IBC) did not submit a written response to the provisional findings or Remedies Notice. However, it did attend a telephone conference response hearing on 12 July 2013 where it gave its views on remedy C3 (the creation of a cement buying group or groups).

C3

397. IBC said that the effectiveness of this remedy would depend to some extent on the level of the supply chain where the cement buying group or groups operated.⁵⁷⁸ IBC was effectively an interface between its approved suppliers of construction materials and its 157 independent builders' merchant members. Members did not have to pay a membership fee to join this third party buying group,⁵⁷⁹ nor were they compelled to purchase materials exclusively through IBC.⁵⁸⁰
398. Cement accounted for approximately 8 to 10 per cent of IBC's overall turnover.⁵⁸¹ IBC said that it had not experienced any difficulty dealing with cement producers in GB.⁵⁸²
399. It considered that the construction products market in GB behaved differently from others elsewhere in the EU in that GB manufacturers negotiated with and sold products directly to the end-users.⁵⁸³ It also said that some independent RMX producers gained a competitive advantage from individually negotiating cement prices.⁵⁸⁴

⁵⁷⁶ *ibid*, paragraph 4.3.

⁵⁷⁷ [MPA response hearing summary](#), paragraph 18.

⁵⁷⁸ [IBC response hearing summary](#), paragraph 14.

⁵⁷⁹ *ibid*, paragraph 1.

⁵⁸⁰ *ibid*, paragraph 19.

⁵⁸¹ *ibid*, paragraph 8.

⁵⁸² *ibid*, paragraph 18.

⁵⁸³ *ibid*, paragraph 15.

⁵⁸⁴ *ibid*, paragraph 13.

Supporting analysis to cement plant divestiture remedy

1. In this appendix, we present the analysis underlying our consideration of the cement plant divestiture.
2. It comprises the following annexes:
 - Annex A: General views on the effectiveness of a cement plant divestiture remedy
 - Annex B: Details of cement plants in GB
 - Annex C: Design considerations relevant to the scope of a divestiture package:
 - Supplement 1: Production and capacity information
 - Supplement 2: Treatment of latent capacity
 - Supplement 3: Distribution capabilities of cement plants
 - Supplement 4: Cement customer catchment areas
 - Supplement 5: Availability and procurement of raw materials
 - Supplement 6: Production efficiencies
 - Supplement 7: Capacity utilization based on ETS benchmark allocations
 - Supplement 8: Historic financial performance
 - Annex D: Assessment of cement plants for possible divestiture
 - Annex E: Estimating the number of RMX plants within a divestiture package
 - Annex F: Impact of divestiture on market structure
 - Annex G: Consideration of suitable purchasers

General views on the effectiveness of a cement plant divestiture remedy

Introduction

1. This annex provides the general views of parties that were set out in the provisional decision on remedies in relation to the effectiveness of a cement plant divestiture remedy.

General views

2. An argument common to all of the Top 3 cement producers was the impact of recent market developments on competition in the GB cement markets, in particular, the replacement of Tarmac by HCM in January 2013 as the new fourth GB cement producer, thereby not necessitating another new entrant.
3. Lafarge Tarmac told us that a cement plant divestiture remedy would not be an effective remedy,¹ and that the creation of HCM had gone much further than simply replicating the previous existence of Tarmac as it had created a substantially different competitor.² It added that there was already increased competition through the introduction of HCM, which had significant capacity and market share. Therefore it did not understand how a fifth competitor would increase competition, particularly as the majority of Lafarge Tarmac's cement plants were already operating at full capacity, and consequently any new competitor would find it near impossible to increase output or reduce prices. In addition, given that there were other remedy options available, it argued that a cement plant (or an RMX plant) divestiture remedy would not be required,³ for example it believed that an alternative remedy that freed up the supply chain for GGBS (a cement substitute) would itself drive down cement prices.⁴
4. Lafarge Tarmac told us that the focus of our competition concerns appeared to be on the conduct of the major cement producers, rather than on the structure of the market. As such, it argued that a structural divestiture remedy should not be imposed for a 'conduct-based AEC'.⁵
5. Hanson told us that it believed that the creation of HCM had effectively introduced a new player and significant competitor, which had increased competition in the market. It noted in particular that HCM was operating in a completely different manner to how Tarmac had operated as the fourth player in the market, and that HCM was utilizing its excess capacity to sell to the market generally, in comparison with Tarmac whose cement operations had been focused on 'self-supply'.⁶ It told us that it did not believe that there was room in the market for a new competitor and that a fifth GB producer would not have the effect of reducing prices as there was already sufficient competition in the market. It argued that such a step could harm the economic viability of the other producers, as any new entrant would have to price cement in a manner that was going to generate sufficient returns to cover the substantial fixed costs involved in running a cement plant, and the subsequent volumes required

¹ Lafarge Tarmac response hearing summary, paragraph 11.

² ibid, paragraph 9.

³ ibid, paragraphs 11 & 16.

⁴ ibid, paragraph 12.

⁵ Lafarge Tarmac response to provisional findings and Remedies Notice, paragraph 191b).

⁶ Hanson response hearing summary, paragraph 7.

to achieve this could potentially be severe for viability of the established players in the market.⁷

6. Cemex told us that it did not believe that there was a need for a new entrant as there was already a new entrant in the form of HCM. It added that the entry of HCM fully undermined any 'alleged coordination' in the GB cement markets.⁸ It also argued that behavioural remedies should be preferred to structural remedies,⁹ and that measures to reduce market transparency, eg restrictions on the monthly publication of cement market data, would address the cause of the AEC rather than its results.¹⁰
7. Aggregate Industries told us that overall, structural remedies were likely to be more effective than any behavioural remedies,¹¹ and that the entry into the GB cement markets by HCM and [redacted] would [redacted] be effective in increasing competition in the GB cement markets,¹² and would [redacted].¹³ [redacted]¹⁴
8. The OFT believed that there was a strong justification for divestiture remedies involving cement and RMX plants. However, it added that divestitures alone would not be enough to remedy the Coordination AEC, and therefore behavioural remedies would also be necessary to minimize any risk of collusion.
9. [A mid-tier aggregates and RMX producer] told us that cement and RMX plant divestiture remedies together with behavioural remedies would correctly focus on the structure and conduct of the suppliers at their level of the supply chain, and therefore would be sufficient to address the coordination AEC and increase the relative customer buyer power without the need for the creation of a separate cement buying group (as set out in the Remedies Notice).¹⁵
10. One individual, F E Gilman,¹⁶ told us that divestiture remedies were essential and that cement plant divestitures would be far simpler to implement than divestitures of downstream operations.¹⁷ However, it suggested a more extensive structural remedy than what we had proposed in the Remedies Notice, whereby it proposed that each cement plant should be held under separate ownership by new players,¹⁸ thereby also ensuring the removal [redacted] from the 'cementitious industry'.¹⁹
11. Brett Group, a mid-tier independent producer of aggregates and RMX operating in the South-East,²⁰ supported the decoupling of cement from RMX and other integrated operations. However, it added that it would be preferable to divest a cement plant with no, or very little, downstream operations, as this would create a new entrant with an interest in selling beyond its own downstream operations.²¹ It also considered that whilst the current number of GB cement producers could potentially

⁷ [ibid](#), paragraph 19.

⁸ [Cemex response to Remedies Notice](#), paragraph 4.67.

⁹ [ibid](#), paragraph 4.67.

¹⁰ [ibid](#), paragraph 4.69.

¹¹ [Aggregate Industries response hearing summary](#), paragraph 35.

¹² [Aggregate Industries response to Remedies Notice](#), paragraph 3.2.

¹³ [ibid](#), paragraph 2.1.

¹⁴ [Aggregate Industries response hearing summary](#), paragraph 7.

¹⁵ Remedies Notice response from [\[a mid-tier aggregates and RMX producer\]](#), paragraph 2.1.

¹⁶ Chairman of FH Gilman & Co, an independent producer of aggregates, RMX and asphalt that went into administrative receivership in May 2011.

¹⁷ [F E Gilman response to Remedies Notice](#), paragraph 3.

¹⁸ [ibid](#), paragraphs 4 & 5.

¹⁹ [ibid](#), paragraph 15.

²⁰ Robert Brett & Sons Ltd (Brett Group) is the ultimate parent company for its two primary trading subsidiaries, Brett Aggregates Ltd and Brett Concrete Ltd (paragraph 3.67).

²¹ [Brett Group response hearing summary](#), paragraph 6.

address the AEC, the fact that they were so vertically integrated meant that they were generally less interested in supplying it with cement. It added that [REDACTED].²²

12. [An independent RMX producer] told us that the reduction in cement prices (both in terms of quoted and achieved prices) in the months leading up to, and following, the entry by HCM, demonstrated that the GB cement markets were not operating correctly and that prices were higher as a result. It encouraged the CC to take action to improve competition further, but did not explicitly state that this should take the form of a cement plant divestiture remedy.²³
13. Breedon Aggregates told us that whilst this remedy would increase competition to some degree, it was not sure whether a new (fifth) entrant would make a significant difference to the degree of competition, given that there were already four producers and a number of importers in GB. It added that the problems with competition might therefore be due to reasons other than the number of market participants.²⁴
14. We also received views from three cement importers:
 - (a) Dragon Alfa (CPV), an operator of a single cement import terminal at Sharpness docks in the South-West,²⁵ told us that if there were more cement producers, this would have the effect of increasing competition in the GB cement markets.²⁶
 - (b) However, CRH,²⁷ which operates seven cement import terminals in GB, told us that it considered cement prices in GB to be competitive, and that [REDACTED].²⁸
 - (c) [REDACTED], Titan, which operates one cement import terminal in Hull.²⁹ Titan told us that cement plant divestitures might promote competition between cement producers, but they could potentially weaken competition from cement importers who might struggle to compete in a region where a divestiture had occurred.³⁰ It told us that it [REDACTED].³¹

²² *ibid*, paragraph 11.

²³ In its response, [REDACTED] described how in September 2012, it had received 'cold calls' looking for business from two incumbent [REDACTED] that had not contacted it for some years. It also mentioned that it had received a quote from [REDACTED] in March 2013, and in May 2013, it was able to negotiate a better price from its current supplier ([REDACTED]) (provisional findings and Remedies Notice response from [an independent RMX producer]).

²⁴ [Breedon Aggregates response hearing summary](#), paragraph 6.

²⁵ Dragon Alfa is based in the South-West of England and operates one import terminal at Sharpness Docks, Gloucestershire (Appendix 3.1, paragraph 134). Dragon Alfa is a wholly-owned subsidiary of CPV, the Spanish multinational heavy building materials producer (paragraph 3.69).

²⁶ [Dragon Alfa \(CPV\) response hearing summary](#), paragraph 10.

²⁷ CRH is the UK holding company of CRH plc (paragraph 3.77).

²⁸ [CRH response hearing summary](#), paragraph 10 (its total number of import terminals is based on paragraphs 2–4).

²⁹ Titan carries out the UK cement import operations of Titan Cement Company SA, a Greek multinational producer of heavy building materials (paragraphs 3.84 & 3.85).

³⁰ [Titan response hearing summary](#), paragraph 11.

³¹ *ibid*, paragraph 12.

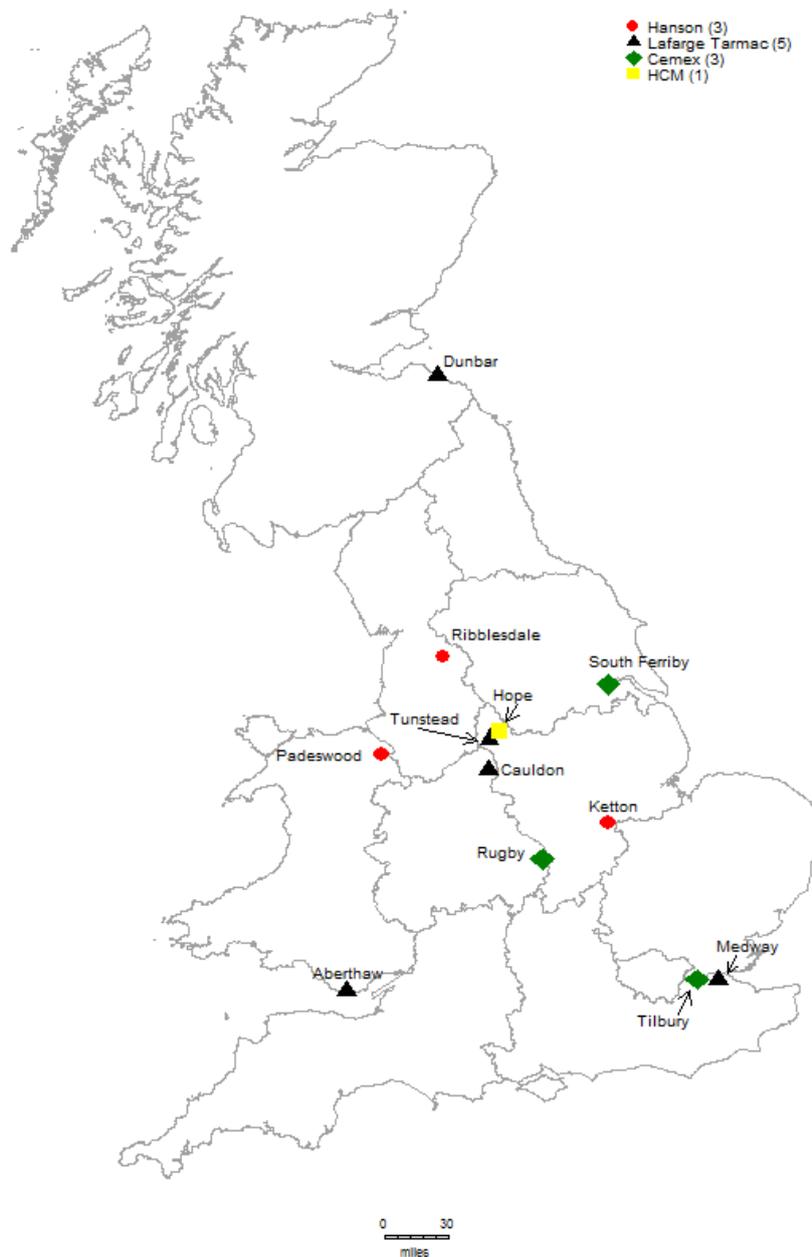
Details of cement plants in GB

Introduction

1. This annex provides background information on the cement facilities of the GB cement producers. Figure 1 shows a map of all ten cement plants in GB.

FIGURE 1

Locations of cement plants in GB



Source: GB cement producers.

Note: 'Medway' represents a site where Lafarge Tarmac has planning permission to construct a new 1.4 Mt cement plant and is therefore not counted as an active cement plant. 'Tilbury' is a stand-alone grinding station, which is owned by Cemex.

2. There are ten cement plants in GB which produce and grind clinker into cement, nine of which are owned and operated by the Top 3 cement producers:
 - (a) Lafarge Tarmac has four cement plants: (i) the Aberthaw plant in South Glamorgan, Wales; (ii) the Cauldon plant in Stoke-on-Trent in Staffordshire in the West Midlands; (iii) the Dunbar plant in East Lothian, Scotland; and (iv) the Tunstead plant in Buxton, Derbyshire in the East Midlands.
 - (b) Hanson has three cement plants: (i) the Ketton plant in Stamford, Lincolnshire; (ii) the Padeswood plant in Mold, Flintshire in Wales; and (iii) the Ribblesdale plant in Clitheroe, Lancashire.
 - (c) Cemex has two cement plants: (i) the Rugby plant in Rugby, Warwickshire, in the West Midlands; and (ii) the South Ferriby plant in Barton-upon-Humber in Lincolnshire.
 - (d) HCM, the fourth and smallest GB cement producer, has one cement plant: the Hope plant in Hope, Derbyshire, in the West Midlands.
3. Two of the Top 3 cement producers also have additional clinker grinding capacity that is not co-located at any of their cement plants:
 - (a) Lafarge Tarmac has a grinding station at Barnstone in Nottingham and a mothballed grinding station at Westbury in Wiltshire.
 - (b) Cemex has a stand-alone grinding station located in Tilbury, Essex.
4. In relation to mothballed capacity, ie clinker and cement production capacity that has been mothballed:
 - (a) Hanson has a mothballed kiln at its Ketton plant, and mothballed grinding mills at each of its three cement plants;
 - (b) Cemex has a mothballed kiln at its South Ferriby plant; and
 - (c) as mentioned above, Lafarge Tarmac has a mothballed grinding station at Westbury.
5. Only Lafarge Tarmac has any permitted capacity, ie production capacity which has received planning permission, as it has:
 - (a) received planning permission to construct a second kiln at its Tunstead plant; and
 - (b) been granted an option by Lafarge Group to construct a new cement plant on Lafarge Group's freehold greenfield site in Medway, Kent.
6. In relation to cement import terminals:
 - (a) Lafarge Tarmac owns one import terminal in the South-East;³²
 - (b) Cemex operates two active import terminals (Southampton and Dagenham) which are used as storage depots for cement manufactured at its Rugby plant, as well as a mothballed import terminal at Newport. [X]³³

³² Table 3.11 of Section 3.

(c) Hanson operates two import terminals in England.³⁴

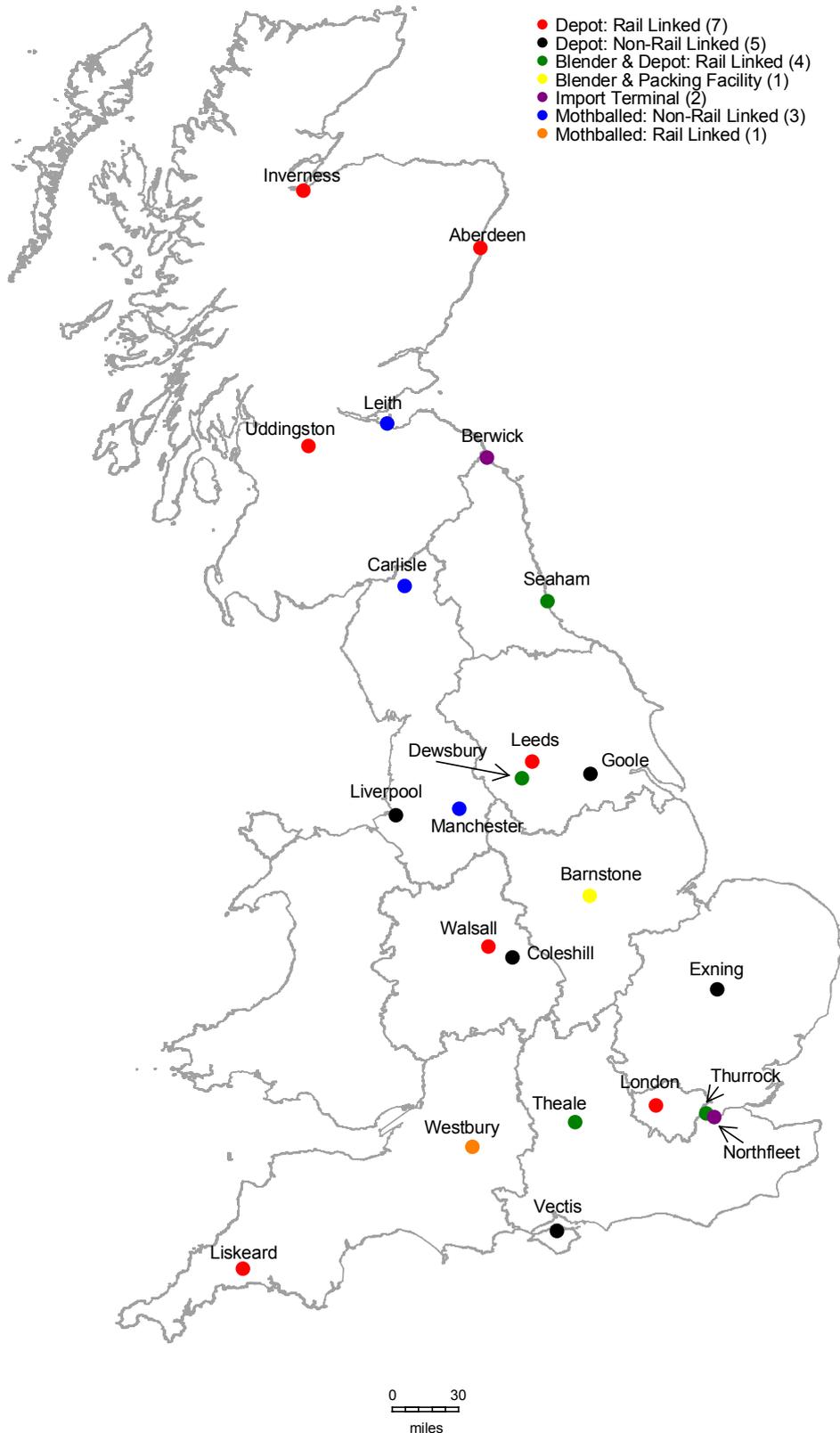
7. In Figures 2 to 4 below we show a map for each of the Top 3 cement producers, showing the locations of their rail-linked and non-rail-linked depots, their import terminals, as well as other sites, eg blending and packing facilities (based on each of the Top 3 cement producers' 2011 transactions data).

³³ Appendix 3.1, paragraph 33.

³⁴ Paragraph 3.30.

FIGURE 2

Lafarge Tarmac: cement site locations (non-clinker production)



Source: Lafarge and Tarmac (FY11 transactions data).

Note: Some depots also serve as import terminals. NB: Depots Theale (in West Berkshire), Walsall (in the West Midlands) and Dewsbury (in West Yorkshire) have all been divested to HCM.

FIGURE 3

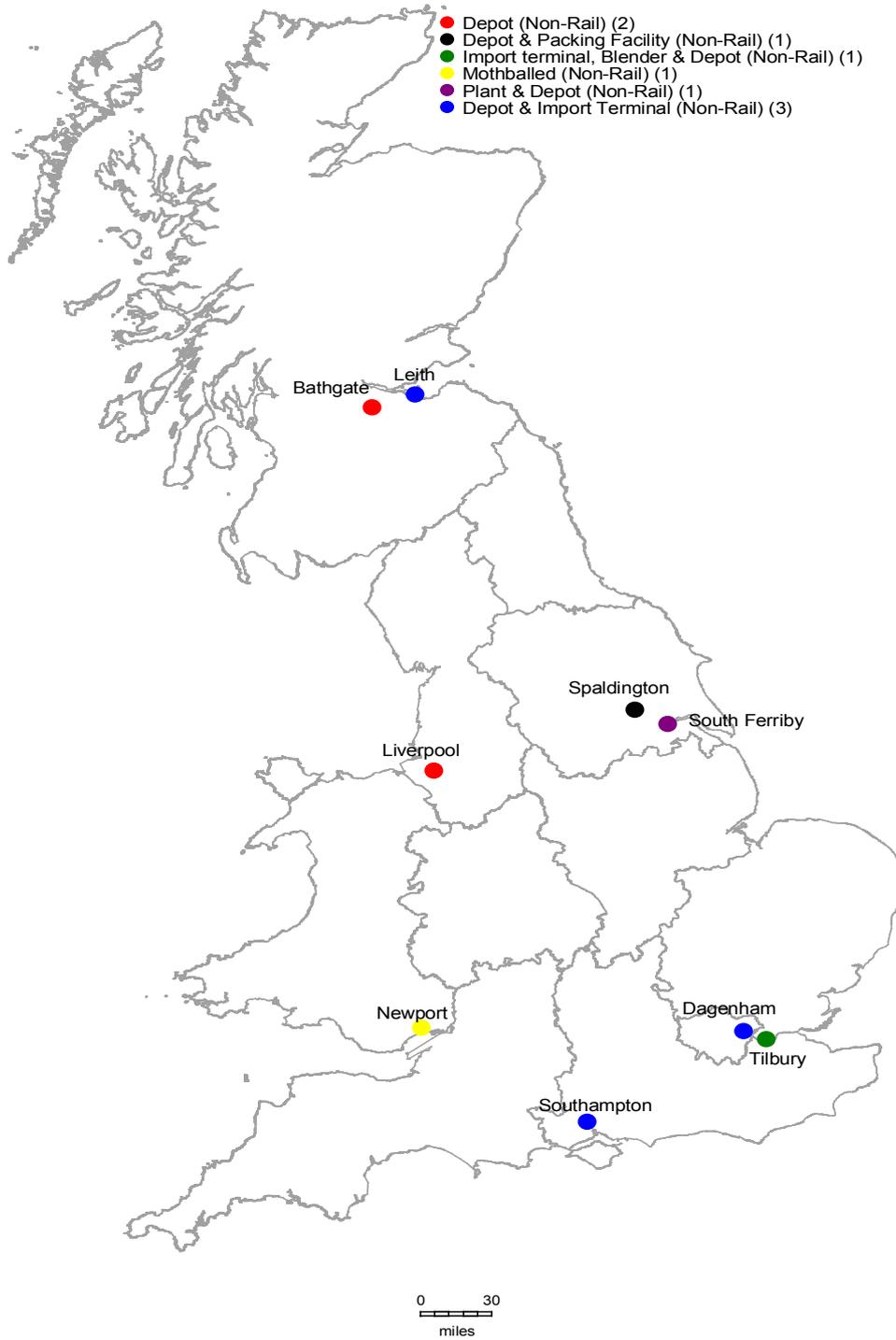
Hanson: cement site locations (non-clinker production)



Source: Hanson (FY11 transactions data).
Note: Some depots also serve as import terminals.

FIGURE 4

Cemex: cement site locations (non-clinker production)



Source: Cemex (FY11 transactions data).
Note: Some depots also serve as import terminals.

Design considerations relevant to the scope of a divestiture package

Introduction

1. This annex sets out our assessment of several key issues in the design of a possible cement plant divestiture package, where 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 also concerned with identifying and addressing potential composition risks.
2. We focused our assessment on the following issues:
 - (a) cement production capacity (paragraphs 4 to 10);
 - (b) location, geographic reach and distribution capabilities (paragraphs 11 to 21);
 - (c) availability of raw material reserves (paragraphs 22 to 28);
 - (d) production efficiency (paragraphs 29 to 42);
 - (e) vertical integration considerations (paragraphs 43 to 56); and
 - (f) financial considerations (paragraphs 57 to 60).
3. For each of the above issues, we set out the views of parties; our assessment of the relevant evidence; and our conclusions. To assist us with our assessment of these issues, we asked the Top 3 cement producers to provide us with information concerning each of their cement plants, including information concerning their efficiency, raw materials and distribution network.

(a) Cement production capacity

4. In relation to production capacity, we considered that sufficient production capacity and scale would be required by a new entrant, to be an effective competitive constraint; and for the divestiture package to attract potential and suitable purchasers. We considered that a divestiture of a cement plant with insufficient production capacity would weaken the structural impact of this remedy on the AEC.
5. A number of parties considered a cement plant's production capacity to be a relevant design consideration:
 - (a) Hanson told us that the capacity of the cement plant was one of numerous factors that would be involved in determining which cement plants were suitable for divestiture.¹
 - (b) The OFT told us that we should consider the minimum plant size required for a sustainable operation as part of an assessment into determining the level of cement plant divestitures that might be required.

¹ [Hanson response hearing summary](#), paragraph 23.

- (c) Cemex described how a divestiture of a plant with low production capacity might be a disadvantage. It told us that [REDACTED].²
6. Some of the parties' views concerning production capacity related to the need for a divested cement plant to achieve economies of scale:
- (a) [REDACTED]³
- (b) Breedon Aggregates told us that a divested cement plant needed to be reasonably sized so that economies of scale could be obtained, and that this was an important consideration when acquiring a cement plant.⁴
- (c) Cemex told us that the [REDACTED].⁵
7. We considered that the size of a cement plant's production capacity was relevant for the following reasons:
- (a) As we found in Section 7,⁶ we would expect a cement plant's production capacity to be a good indicator of its potential production and market shares going forwards, and therefore it provides one means by which its ability to exert a competitive constraint could be measured.
- (b) Given parties' views concerning the benefits of scale, the ability of a cement plant to compete effectively would to some extent depend on its ability to extract such benefits. We note that Cemex's Barrington plant was closed in the last quarter of 2008 because it was not financially viable due to its small annual production capacity (of around 300 kt), as well as requiring further investment to meet modern environmental and regulatory standards.⁷
8. Based on Appendix 13.2, Annex C, Supplement 1, Tables 2 and 5, we calculated that in GB, the average annual clinker capacity for a GB cement plant based on active kilns was 0.8 Mt over the period from FY10 to FY12, ranging from [REDACTED].⁸ This average active clinker capacity approximates to just under 1 Mt of cement production capacity. We note that the Top 3 cement producers' cement plants with active clinker production capacity below the GB average are: Lafarge Tarmac's Aberthaw plant ([REDACTED]); Hanson's Padeswood plant ([REDACTED]);⁹ and Cemex's South Ferriby plant ([REDACTED] if its mothballed kiln was included).
9. We also considered how we should treat latent capacity in the context of this remedy. Our detailed assessment is set out in Appendix 13.2, Annex C, Supplement 2, where we concluded that we would primarily focus on active capacity when determining which cement plant to divest, and only take latent capacity into account when we examine the impact of the remedy on the future structure of the GB cement markets in Appendix 13.2, Annex F.

² [Cemex response to Remedies Notice](#), paragraph 5.10.

³ [REDACTED]

⁴ [Breedon Aggregates response hearing summary](#), paragraph 8(c).

⁵ [Cemex response to Remedies Notice](#), paragraph 5.10.

⁶ In paragraph 7.20, we found that the GB cement producers' shares of clinker production capacity were similar to their market shares.

⁷ Appendix 7.2, paragraph 14(a) & Figure 1.

⁸ Clinker production capacity based on active kilns only, ie excluding mothballed kilns.

⁹ We note that whilst the Ribblesdale plant's clinker capacity was [REDACTED] Mt in FY12, it had been [REDACTED] Mt in FY11. We considered that the variation in the clinker capacity was due to differences in the underlying assumptions used in their respective calculations, eg as shown in Appendix 13.2, Annex C, Supplement 6, the Ribblesdale plant was operated for [REDACTED] days in FY11, but [REDACTED] days in FY12.

10. We concluded that the production capacity of a divested cement plant should not be smaller than the GB average and should therefore have around 1 Mt of cement production capacity or more. Based on Appendix 13.2, Annex C, Supplement 1, this represents just over 10 per cent of total GB production capacity. We considered that a divestiture of a cement plant with significantly less capacity than this, would raise concerns in relation to the structural impact of this remedy on the AEC as well as reducing the likelihood that the divestiture package would attract sufficient interest from potential purchasers.

(b) Location, geographic reach and distribution capabilities

11. We considered the views of parties on the relevance of a cement plant's location, geographic reach and distribution capabilities. It was clear from the views of parties that these three issues were closely related.
12. In relation to a cement plant's location, MI (HCM) told us that the divestiture of centrally located plants would be more beneficial as it would result in a 'central market' with multiple competitors and would not result in the creation of 'local markets'.¹⁰
13. Titan told us that one unintended consequence of a cement plant divestiture could be the creation of 'local hotspots of competition' in areas where a divestiture took place. It added that this could lead to intense localized competition and 'negatively' affect other market participants in the area, such as cement importers, who are already 'challenged by the peculiarities inherent' in importing cement.¹¹ [REDACTED]¹²
14. Brett Group told us that if it were to consider acquiring a divested cement plant, the plant's location would need to align with its other construction materials interests.¹³ It told us that in Brett Group's case, its key market for its own aggregates and RMX operations was in the South-East of England.¹⁴ [REDACTED], it added that the planning permission that had been granted for a new cement plant in Medway, Kent, [REDACTED].¹⁵
15. Several parties mentioned the importance of a cement plant's geographic reach and transport links:
- (a) Aggregate Industries told us that [REDACTED], it added that whilst a centrally located plant could give its operator access to a large geographic part of the market, a good logistical support network could improve the desirability of cement plants that were less centrally located. It considered [REDACTED].¹⁶
- (b) Hanson told us that one of the numerous factors that would be involved in determining which cement plants were suitable for divestiture would be the plant's access to customers and its rail-linkage.¹⁷
- (c) Breedon Aggregates told us that a cement plant would need to be connected to the rail network so that it could reach as many customers as possible.¹⁸

¹⁰ MI and HCM response hearing summary, paragraph 19.

¹¹ Titan response hearing summary, paragraph 9.

¹² ibid, paragraph 10.

¹³ Brett Group response hearing summary, paragraph 8.

¹⁴ ibid, paragraph 5.

¹⁵ ibid, paragraph 9.

¹⁶ ibid, paragraph 13.

¹⁷ Hanson response hearing summary, paragraph 23.

¹⁸ Breedon Aggregates response hearing summary, paragraph 8(a).

- (d) CRH, when considering whether to bid for a cement plant or not, told us that it would look at the plant's location and transport links (among other factors). It added that the more modern and better located a given plant was, the more likely it would be interested in acquiring it.¹⁹
- (e) MI told us that a buyer of a central cement plant, [REDACTED], would be interested in (among other things) the plant's rail links.²⁰
16. One party, F E Gilman, told us that there should be a separation of cement production and distribution activities,²¹ and argued that the 'overwhelming majority of bulk cementitious material transport' was under the control of producers,²² and that each geographical production site and distribution centre (and its associated transport operations) conferred a 'potential monopoly of supply in that locality'.²³
17. Cemex told us that it viewed the market as 'national' in that each cement plant, in its own right, could reach every part of the country. It added that the plant location was a factor that a buyer would have to balance against other aspects of the plant in question, and that a rail connection would be a critical factor for any buyer to consider.²⁴ Whilst none of Cemex's cement plants are rail-linked, Cemex told us that it could transport cement from its plants to customers anywhere in GB by road, and that it used its import terminals to serve customers in more remote parts of GB, eg it served many customers in Scotland by transporting cement produced at its South Ferriby plant to a terminal in Leith (Scotland) by ship.²⁵ However, [REDACTED], it also told us that because its [REDACTED] compared with [REDACTED]. It argued that the lack of [REDACTED] was a significant factor affecting its [REDACTED] and contributed to why its [REDACTED] other GB cement producers.²⁶
18. However, Lafarge Tarmac told us that a divestiture of a cement plant would not necessarily require a rail link and added that a cement plant without a rail connection could be bought at a lower price. However, it stated that a cement plant with no rail link would have a more limited network and therefore less opportunity to sell to customers. It also told us that cement plants could be fully rail-linked with sidings within the plant or non-fully rail-linked where a rail connection was close, although this would entail additional logistical costs.²⁷
19. In Appendix 13.2, Annex C, Supplement 3, we assessed the availability, and use of, transport links, in terms of rail-linked and non-rail-linked depots for each of the Top 3 cement producers' cement plants. For those cement plants that did not have a rail connection, we also set out the views of the Top 3 cement producers in relation to the timescale and costs that might be involved in constructing a new rail connection. We also looked at the cement volumes dispatched from each cement plant to its rail-linked and non-rail-linked depots to determine which of these may be considered key for its distribution capabilities. Based on Appendix 13.2, Annex C, Supplement 3, out of the Top 3 cement producers' nine cement plants, four are rail-connected, namely Lafarge Tarmac's Dunbar and Tunstead plants, and Hanson's Ketton and Ribblesdale plants. For those cement plants with a rail connection, the volumes transported by rail in FY12 accounted for between [REDACTED] (Ketton plant) and [REDACTED] per cent (Dunbar plant) of total cement volumes dispatched from the relevant plant.

¹⁹ CRH response hearing summary, paragraph 11.

²⁰ MI and HCM response hearing summary, paragraph 21.

²¹ F E Gilman response to Remedies Notice, paragraph 11.

²² ibid, paragraph 10.

²³ ibid, paragraph 14.

²⁴ Cemex response hearing summary, paragraph 23.

²⁵ Appendix 3.1 paragraph 32.

²⁶ Cemex response to Remedies Notice, paragraphs 5.8 & 5.10.

²⁷ Lafarge Tarmac response hearing summary, paragraph 20.

20. Based on the evidence from parties and our own assessment, we considered that the quality of the transport network available to a cement plant would influence its geographic reach and ability to serve a wider customer catchment area. We considered customer catchment areas in further detail in Appendix 13.2, Annex C, Supplement 4. Furthermore, we considered that distribution capabilities were relevant, as any cost advantage that a cement plant derives from its production efficiencies could be eroded if its limited distribution capabilities resulted in higher distribution and haulage costs to reach its customers.
21. On this basis, we concluded that it would be necessary for any cement plant divestiture package to include a network of depots in order to provide the divested cement plant with sufficient geographic reach and access to a wide customer catchment area.

(c) Availability of raw material reserves

22. By availability of raw material reserves, we refer to the number of years remaining on a cement plant's permitted raw material reserves, although this will invariably depend on the annual extraction rate assumed in its calculation.
23. There was a broad consensus from parties that the availability of sufficient raw materials to the cement plant was a key consideration that underpinned the long-term sustainability of its operation:
 - (a) Breedon Aggregates told us that when buying a cement plant, one important factor (among others) was its access to sufficient mineral reserves in order to ensure its long-term operation.²⁸ It mentioned the issue of access to mineral reserves as a 'future risk', and that it would be interested in particular in acquiring a cement plant that did not have such 'future risks' attached.²⁹
 - (b) CRH told us that among other things, it would look at the proximity of the cement plant to its mineral resources when considering whether to buy a plant.³⁰
 - (c) MI told us that a potential purchaser of a cement plant would be interested in the longevity of the asset it would acquire, in terms of limestone reserves plus any planning restrictions or opportunities.³¹
 - (d) Aggregate Industries told us that [REDACTED].³²
 - (e) Lafarge Tarmac told us that the availability of its limestone reserves determined the lifespan of a cement plant rather than the age of its kiln.³³ It also told us that in GB, cement plants were generally located in very close proximity to significant primary raw material reserves such that these were likely to be sufficient to sustain the cement plant over the course of its intended productive life. It added that these on-site reserves were by definition the most economic raw material supply available to serve that cement plant, but it was also entirely possible to bring in raw materials from much further afield and still maintain a competitive domestic operation, eg Cemex's Rugby plant, where chalk and clay were supplied from

²⁸ [Breedon Aggregates response hearing summary](#), paragraph 8(c).

²⁹ *ibid*, paragraph 11.

³⁰ [CRH response hearing summary](#), paragraph 11.

³¹ [MI and HCM response hearing summary](#), paragraph 21.

³² [Aggregate Industries response hearing summary](#), paragraph 8.

³³ [Lafarge Tarmac response hearing summary](#), paragraph 5.

quarries located around [REDACTED] and [REDACTED] miles respectively from the cement plant itself.

- (f) Hanson told us that one of the factors that would be involved in determining which cement plants were suitable for divestiture would be its access to sufficient reserves and any associated planning permission.³⁴
24. Cemex also told us that a cement plant's raw material quarries were an integral part of the cement production process, and therefore if the cement plant's operations were to be divested, the relevant quarries would also need to be included within the divestiture package. It told us that [REDACTED].³⁵
25. For each of the Top 3 cement producers' cement plants, we examined the availability and procurement arrangements in relation to its raw materials, to determine whether it would face any issues sourcing sufficient raw materials economically into the future. The details of our assessment are set out in Appendix 13.2, Annex C, Supplement 5.
26. Based on Appendix 13.2, Annex C, Supplement 5, in volume terms, the most heavily consumed raw material is limestone (or chalk). For all of the Top 3 cement producers' cement plants, limestone is internally supplied by their own respective quarries. We considered that the security of supply of limestone would be a key consideration for a purchaser as its supply represents an integral part of the cement production process. We considered that this would be best achieved if the associated limestone quarries formed part of any cement plant divestiture package.
27. In relation to other raw materials which a cement plant currently procures from external suppliers, in the event of its divestiture, we would expect a purchaser to determine whether existing procurement arrangements should be continued or whether alternative economic sources should be found.
28. We considered that the longevity of the availability of limestone reserves underpins a cement plant's ability to utilize its maximum production capacity on a sustained basis into the medium to long term. For example, the closure of the Northfleet plant in March 2008 was due to the expiry of its quarry planning permission.³⁶ We also noted that the Hope plant when it was divested to MI had permitted limestone reserves of around [REDACTED] years, and potential reserves of around [REDACTED] years.³⁷ It was also divested together with Lafarge's Dowlow Quarry to provide a potential alternative source of limestone.³⁸ We would expect that a buyer would generally seek at least 25 to 30 years of permitted limestone reserves. Where permitted reserves fall below this level, we would take into account the ability of the owner of the cement plant concerned to extend its permitted reserves by obtaining further planning permission. Based on Appendix 13.2, Annex C, Supplement 5, the Ketton plant was the only cement plant with [REDACTED] years of permitted reserves, ie [REDACTED] years of permitted reserves. However, by obtaining planning permission to extend its permitted limestone reserves, the Ketton plant can increase its availability by [REDACTED] years.

³⁴ [Hanson response hearing summary](#), paragraph 23.

³⁵ [Cemex response to Remedies Notice](#), paragraph 5.8.

³⁶ Appendix 7.2, paragraph 27(a).

³⁷ [A report on the anticipated construction materials joint venture between Anglo American PLC and Lafarge S.A.](#), 1 May 2012, paragraph 8.35.

³⁸ *ibid*, paragraph 8.33.

(d) Production efficiency

29. In relation to a cement plant's production efficiency, we looked at its: (i) production technology; (ii) costs of production; (iii) kiln reliability; and (iv) carbon efficiency.

(i) Production technology

30. When referring to a cement plant's production technology, we are primarily concerned with whether a cement plant is a dry-process, wet-process, semi-wet or semi-dry process plant. We noted that three of the cement plant closures since 2007 were 'inefficient' wet-process plants, namely the Northfleet plant (2008), the Barrington plant (2008) and the Westbury plant (2010).³⁹ For example, Lafarge (now Lafarge Tarmac) had told us that production costs at its Westbury plant had been high because of its energy-intensive wet process, and was the reason for its closure back in 2010.⁴⁰
31. In relation to production technology, [REDACTED].⁴¹ CRH told us that it would prefer a more modern plant, and therefore its age was a relevant consideration when deciding whether to acquire a cement plant.⁴² Lafarge Tarmac, by contrast, told us that the efficiency of a cement plant was based on its production technology and not on its age.⁴³
32. In relation to the age and production technology of the cement plants, we noted that:⁴⁴
- (a) The kilns at the Padeswood, Tunstead and Rugby plants were all commissioned after 2000: in 2005, 2004 and 2002 respectively. During the 1980s, the kilns at the following cement plants were commissioned: the Dunbar plant (1986), the Ketton plant (Kiln 8 in 1986), the Cauldon plant (1985) and the Ribblesdale plant (1983). The active kiln at the South Ferriby plant was commissioned in 1978 (Kiln A3), whilst the Hope plant's two kilns (both currently active) were commissioned in 1970. The Aberthaw plant has the oldest active kiln in GB, having been commissioned in 1967.
 - (b) All of Lafarge Tarmac's and Hanson's cement plants are dry-process plants, whilst Cemex operates the only semi-wet process plant (the Rugby plant) and semi-dry process plant (the South Ferriby plant).
33. Based on the above evidence, we considered it likely that production technology would take precedence over the age of the kiln or plant, and that a purchaser would express a strong preference for a dry-process plant over a wet- or semi-dry process plant, in particular given its implications on costs. For example, we stated that a wet-process plant would have at least 50 per cent higher thermal energy costs (the single largest element of production costs) than a dry-process plant.⁴⁵ We also noted that only Cemex did not have any dry-process plants.

³⁹ Appendix 7.2, paragraph 47 & Figure 1.

⁴⁰ Appendix 7.2, paragraph 36.

⁴¹ [REDACTED]

⁴² [CRH response hearing summary](#), paragraph 11.

⁴³ [Lafarge Tarmac response hearing summary](#), paragraph 5.

⁴⁴ Appendix 7.7.

⁴⁵ Appendix 7.7.

(ii) Costs of production

34. In relation to the costs of production, CRH told us that one of the factors it would consider when deciding whether to acquire a cement plant was its efficiency, particularly in relation to its energy costs.⁴⁶
35. In Appendix 13.2, Annex C, Supplement 6, we compared the key production cost items, namely the costs of raw materials and power for each tonne of clinker produced (unit variable cost), for each of the Top 3 cement producers' nine GB cement plants. Their data, however, suggested differences in measurement definitions which reduced the comparability of their figures across different producers.⁴⁷ We therefore compared the unit variable costs of the cement plants under common ownership (see also Appendix 13.2, Annex C, Supplement 6). We do this for FY12 figures:
- (a) Lafarge Tarmac: in FY12, out of Lafarge Tarmac's four cement plants, the Cauldon plant had the lowest unit variable costs at £[redacted]. This was followed by the Tunstead plant at £[redacted], the Dunbar plant at £[redacted], and lastly the Aberthaw plant at £[redacted].
 - (b) Hanson: in FY12, out of Hanson's three cement plants, the Ketton plant had the lowest unit variable costs at £[redacted], followed by the Ribblesdale plant at £[redacted] and then the Padeswood plant at £[redacted].
 - (c) Cemex: in FY12, out of Cemex's two cement plants, the South Ferriby plant had [redacted] costs at £[redacted] compared with the Rugby plant at £[redacted].

(iii) Kiln reliability

36. We also looked at kiln efficiency and reliability. We considered kiln reliability to be a particularly important consideration where a new entrant acquires a single cement plant with one kiln, as in times of unexpected plant outages a single kiln operator would be unable to service its customers using its own cement volumes. Whilst HCM operates a single cement plant, we note that its Hope plant has two active kilns. Even for a multi-plant operator like Cemex, we noted that the ability to have a second kiln at the same plant (ie the mothballed kiln at its South Ferriby plant) provided it with desired flexibility to be able to service future demand.
37. In Appendix 13.2, Annex C, Supplement 6, we set out our assessment of kiln reliability. Based on our assessment, we found that, in terms of the number of days that a cement plant was operated during each year, both the Cauldon and Tunstead plants consistently achieved the highest figures over the period from FY10 to FY12, not falling below [redacted] and [redacted] days a year respectively. In relation to Lafarge Tarmac's four cement plants, the Cauldon plant and the Aberthaw plant benefited from the lowest extent of kiln breakdown days, with breakdowns (as a percentage of total operating and breakdown days) at [redacted] and [redacted] per cent respectively. These figures were [redacted] per cent for the Tunstead plant and [redacted] per cent for the Dunbar plant. As mentioned in Appendix 13.2, Annex C, Supplement 6, Hanson and Cemex included outages relating to planned maintenance into their calculation of 'breakdown' days and therefore, their downtime percentage figures did not reveal the underlying reliability of their respective kilns.

⁴⁶ CRH response hearing summary, paragraph 11.

⁴⁷ For example, between FY10 and FY12, unit raw material costs ranged from £[redacted] (Ketton plant) to £[redacted] (Rugby plant), whilst unit power costs ranged from £[redacted] (Rugby plant) to £[redacted] (Padeswood plant) (see Appendix 13.2, Annex C, Supplement 6).

(iv) Emissions efficiency

38. In relation to the emissions efficiency of a cement plant, few parties raised this as a relevant issue:
- (a) Breedon Aggregates mentioned ‘emissions issues’ as a ‘future risk’, and that it would be interested in particular in acquiring a cement plant without such ‘future risks’ attached.⁴⁸
 - (b) CRH also mentioned that a cement plant’s compliance with environmental standards was a key factor in its decision whether to bid or not for a cement plant.⁴⁹
 - (c) Cemex told us that [REDACTED].⁵⁰
39. We calculated and compared the emissions factor for each of the Top 3 cement producers’ cement plants, where the emissions factor measures the tonne of carbon emissions associated with the production of one tonne of clinker. Our assessment is set out in Appendix 13.2, Annex C, Supplement 7. Based on Appendix 13.2, Annex C, Supplement 7, Table 1, where we compared the three-year average emissions factor for each of the Top 3 cement producers’ plants, the average emissions factor ranged from [REDACTED] ([REDACTED] plant) for the most carbon efficient cement plant to [REDACTED] ([REDACTED] plant), for the least carbon efficient:
- (a) Lafarge Tarmac: the Tunstead plant had the [REDACTED] average emissions factor with [REDACTED], but was closely followed by the Cauldon and Aberthaw plants which both had an average emissions factor of [REDACTED]. The Dunbar plant was the [REDACTED] carbon efficient out of its four plants with an average emissions factor of [REDACTED].
 - (b) Hanson: the most carbon efficient plant was the [REDACTED] with an average emissions factor of [REDACTED], followed closely by the [REDACTED] with [REDACTED]. The [REDACTED] was the least carbon efficient plant with an average emissions factor of [REDACTED].
 - (c) Cemex: the average emissions factor was [REDACTED] for the South Ferriby plant, and [REDACTED] for the Rugby plant.
40. We also assessed whether any GB cement plant would have to pay for any carbon allowances under EU ETS during ETS Phase III, which lasts from the start of 2013 to the end of 2020, if it wished to produce at full capacity, ie whether a cement plant had a sufficient benchmark allocation of free carbon allowances to produce at full capacity. Based on Appendix 13.2, Annex C, Supplement 7, we found that under ETS Phase III, if all of the Top 3 cement producers operated at their full clinker capacity (notwithstanding that there may be clinker grinding capacity issues that might prevent this from happening), the following cement plants are likely to generate surpluses of carbon allowances: the [REDACTED] and [REDACTED] plants.
41. For Lafarge Tarmac’s plants, its free carbon allowances would enable the Aberthaw plant to produce at [REDACTED] per cent of clinker capacity; the Cauldon plant to produce at [REDACTED] per cent; the Dunbar plant to produce at [REDACTED] per cent; and the Tunstead plant to produce at [REDACTED] per cent. Based on Appendix 13.2, Annex C, Supplement 1, Table 1, a clinker capacity utilization of [REDACTED] per cent at the Cauldon plant represents a [REDACTED] per cent utilization of its cement production capacity. We would expect that producing beyond this level of clinker would require additional carbon allowances to be sourced.

⁴⁸ [Breedon Aggregates response hearing summary](#), paragraph 11.

⁴⁹ [CRH response hearing summary](#), paragraph 11.

⁵⁰ [Cemex response to the Remedies Notice](#), paragraph 3.10.

However, we note that for companies that operate multiple ETS installations either in the UK or in other member states within the EU, there would be some scope for them to reallocate the carbon allowances they receive between their ETS installations, eg if one installation expects to have a surplus of carbon allowances, these can be transferred to another installation that have a shortage. However, we note that the opportunity cost of doing so would be that firms would not be able to rollover any surplus carbon allowances into the following year, or sell them on to the secondary market.

Our views on production efficiency

42. Based on our assessment above, we concluded that ‘production efficiency’ should be regarded as being multi-dimensional, in that there was no single, ‘most efficient’ plant in GB, and that there may be other measures of production efficiency, against which the relative performance of each plant might change. Therefore, when identifying a suitable cement plant(s) for divestiture, we concluded that we should not place too much weight on any single measure of production efficiency, but instead note the relative strengths of each cement plant against a range of such measures as part of an overall assessment of suitability.

(e) Vertical integration considerations

43. Parties generally took the view that a purchaser of a divested cement plant would also require some downstream operations, eg RMX or concrete product plants, as part of a divestiture package.
44. Some parties expressed the view that a divested cement plant must have a significant degree of vertical integration. Others commented on the competition benefits of having a low level of vertical integration, for example this would create the need for the purchaser of a divested plant to compete more vigorously for external sales. One party highlighted the importance of including an aggregates operation into a divestiture package to provide a balance between the cement, aggregates and RMX operations. We set out these viewpoints below.

Parties’ views on the need for vertical integration into RMX

45. Lafarge Tarmac told us that it did not believe that a cement plant divestiture also required RMX plant divestitures, as there was no shortage of available independent RMX customers to be serviced and there were a number of RMX producers without a cement plant, eg Breedon Aggregates. It noted that the level of vertical integration that had been given to HCM under the Lafarge Tarmac JV remedies process was around 50 per cent (ie proportion of production volumes sold internally). Based on a consultation with its customers, it believed that a level of 15 to 20 per cent would be an acceptable level.⁵¹
46. Hanson told us that it did not consider it necessary for any potential buyer of a cement plant to own RMX plants. It added that if a buyer was vertically integrated, it would be likely to supply itself and this would have little to no effect on competition. It also told us that should the buyer wish to enter the RMX market, it could do so as the

⁵¹ [Lafarge Tarmac response hearing summary](#), paragraph 18.

barriers to entry were fairly low. It also told us that Hanson's own vertical integration was designed to benefit its aggregates business.⁵²

47. Cemex told us that it did not believe that a buyer of a divested cement plant required in-house RMX operations. Instead, it believed that such a buyer should serve the external market,⁵³ and added that should the buyer wish to establish its own RMX operations, it could do so as there were no issues concerning barriers to entry into RMX production. It told us that it had entered foreign markets without RMX capacity, and had been able to compete successfully there in both the cement and RMX markets.⁵⁴ In a further submission, Cemex observed that Lafarge Tarmac was the largest and [redacted] of the GB cement producers and commented that it was 'difficult to understand on what basis it can be argued that a large cluster of vertically integrated RMX plants is necessary in order to be able to compete successfully in the GB cement market'.
48. Brett Group told us that there was 'little value' in the creation of another cement producer with some integrated RMX capabilities, and that it would be preferable to divest a stand-alone cement plant or a cement plant with a low level of integrated capacity as this would create a cement producer with an interest in selling beyond its own operations.⁵⁵ It illustrated this by telling us that as cement producers became more vertically integrated they became less interested in supplying the independent sector. It added that [redacted].⁵⁶
49. Aggregate Industries told us that a cement plant bundled together with RMX plants would be less attractive for potential buyers that already owned RMX plants [redacted]. Therefore, it considered that an 'unbundled' divestiture package would be more attractive because of the ease of integration and greater flexibility that this would provide. It added that a 'bundled' divestiture package could equate to a fairly large part of total GB cement production which would be quite challenging and more risky.⁵⁷ It added that [redacted], it saw no need to tie the divestiture of RMX plants to a cement plant divestiture remedy.⁵⁸
50. MI told us that it would be important for any buyer of a cement plant divestiture package to have some form of downward vertical integration, and that these concrete plants needed to be 'reasonably close' to the cement plant in order to limit haulage costs.⁵⁹ It added that it had been looking to enter the GB construction sector for some time, and had previously considered buying the Hope plant when an earlier opportunity to do so had arisen, but did not proceed at the time as it had been the only asset for sale. It decided to acquire the Hope plant when the opportunity presented itself again, because it also included the acquisition of complementary assets.⁶⁰
51. In deciding whether to buy a cement plant, Breedon Aggregates told us that an important consideration was having 'access to in-house concrete production' to ensure that there was a 'guaranteed purchaser' for some of the cement plant's output, and that internal sales could be set at around 10 to 15 per cent of the cement plant's total production.⁶¹ It acknowledged that a buyer of a cement plant that did not

⁵² [Hanson response hearing summary](#), paragraph 20.

⁵³ [Cemex response hearing summary](#), paragraph 22.

⁵⁴ *ibid*, paragraph 26.

⁵⁵ [Brett Group response hearing summary](#), paragraph 6.

⁵⁶ *ibid*, paragraph 13.

⁵⁷ [Aggregate Industries response hearing summary](#), paragraph 10.

⁵⁸ [Aggregate Industries response to Remedies Notice](#), paragraph 11.3.

⁵⁹ [MI and HCM response hearing summary](#), paragraph 18.

⁶⁰ *ibid*, paragraph 1.

⁶¹ [Breedon Aggregates response hearing summary](#), paragraph 8(b).

already own any RMX plants might need to acquire some as ‘building an RMX business from scratch could take some time’, although it considered barriers to entry into the RMX market to be low (eg an RMX plant could be acquired for around £200,000). It told us that for a buyer that already owned an RMX business, it would be relatively straightforward to acquire more plants from other sellers, and increase the scale of its downstream operations to accommodate production from an acquired cement plant.⁶² Since it already owned its own aggregates and RMX operations, if it acquired a cement plant, Breedon Aggregates told us that it would not need to acquire any further RMX plants.⁶³

52. Breedon Aggregates also told us that one of the biggest risks concerning the inclusion of RMX plants into a cement plant divestiture package would be the losses which the RMX business would be likely to sustain for the first couple of years. Therefore, since margins on concrete were low, it cautioned that it would be risky for a buyer to take on a ‘significant’ number of RMX plants together with a cement plant.⁶⁴
53. We considered the following views from cement importers on the need to include some downstream plants into a divestiture package:
 - (a) CRH told us that it would want a cement plant divestiture package to include some RMX plants to ensure that a buyer’s own cement production volumes would have an outlet.⁶⁵ However, it added that wherever possible ‘shared sites’, eg RMX plants that were co-located at an aggregates quarry under different ownership, should not be included in any divestiture package as these sites were more problematic for buyers.⁶⁶
 - (b) Titan told us that the need for a new entrant to be vertically integrated in GB was largely driven by the structure of the GB cement industry, where the incumbent producers were all vertically integrated. It added that the need to be vertically integrated did not arise in some other countries, where vertical integration was less prevalent.

Parties’ views on whether a divestiture package should include aggregates operations

54. Two parties mentioned the relevance of aggregates for a buyer of a cement plant if it also acquired a number of RMX plants:
 - (a) MI told us that once RMX plants were divested to a buyer of a cement plant, these RMX plants could source their aggregates requirement externally, but added that this would not be ‘optimal as there could be issues of quality’ with the aggregates.⁶⁷ Instead, it considered that it would be necessary for at least 80 per cent of the aggregates required for RMX production also to form part of the divestiture package.⁶⁸
 - (b) CRH told us that, in addition to RMX plants, it would also be important for a buyer of a cement plant to have access to a ‘ready supply’ of aggregates.⁶⁹ However, it

⁶² *ibid*, paragraph 10.

⁶³ *ibid*, paragraph 11.

⁶⁴ *ibid*, paragraph 10.

⁶⁵ [CRH response hearing summary](#), paragraph 13.

⁶⁶ *ibid*, paragraph 13.

⁶⁷ [MI and HCM response hearing summary](#), paragraph 18.

⁶⁸ *ibid*, paragraph 25.

⁶⁹ [CRH response hearing summary](#), paragraph 13.

did not imply that an aggregates site should also form part of any divestiture package.

Our views on vertical integration

55. When deciding whether to include downstream operations in a divestiture package, the key considerations are to enable a buyer to compete effectively and to ensure that the divestiture package would be sufficiently attractive to suitable purchasers to ensure an effective disposal takes place. We considered that an acquisition of a cement plant with no RMX plants that resulted in a new entrant with no vertical integration would be a 'high risk' strategy for a purchaser. We therefore considered that the issue of whether a new entrant should have some level of vertical integration was largely to address the composition risks of any divestiture package, and to provide a purchaser with some degree of comfort in terms of having an outlet for some of its cement production and hence a 'platform' for effective competition. We therefore concluded that a purchaser should have the option to acquire a number of RMX plants as part of its acquisition of a cement plant, subject to the conditions set out in Figure 13.1.
56. However, since barriers to entry into, and expansion in, RMX production are low, we considered that the number of RMX plants that a purchaser could acquire as part of the divestiture package could be set at a relatively low level so as to provide an initial platform on which to commence its upstream and downstream operations and to create a divestiture package that would be attractive to a sufficient number of potential purchasers. We took the view that such a level should be calculated as the percentage of total cement production capacity of the divested plant that would be accounted for by the internal cement requirement of its downstream operations (based on downstream production volumes in the 12 months prior to divestiture), and that this should be set at 15 per cent as an upper limit. This level was consistent with the views of parties mentioned above, as well as [§], and would therefore ensure that a new entrant would not have a [§] low level of vertical integration [§]. However, where a suitable purchaser already has its own downstream operations, with which it has already reached, or exceeded, this 15 per cent limit, we did not consider it necessary to include RMX plants within a divestiture package to such a purchaser.

(f) Financial considerations

57. We also considered the potential stand-alone financial performance of a new entrant running a divested cement plant. Since none of the cement plants owned by the Top 3 cement producers was operated as a stand-alone plant, but instead was operated as part of a wider network of cement plants, the historic financial performance of a cement plant may not reflect the future financial performance that might be achieved by that plant if it were to operate on a fully stand-alone basis.
58. In this context, we noted that some of the GB cement producers told us that some economies of scale arose through operating more than one site, because:⁷⁰
- (a) logistics costs could be reduced if production could be matched better geographically with demand;
 - (b) production could be scheduled efficiently across plants; and

⁷⁰ Paragraph 7.48.

- (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.
59. We considered that the effects described above might have implications on the stand-alone financial performance of a cement plant. In Appendix 13.2, Annex C, Supplement 8, we set out the annual financial performance of each cement plant over the period FY10 to FY12. However, we noted that each plant's historic financial performance might not provide a fully accurate indication of its potential future financial performance on a fully stand-alone basis.
60. Based on Appendix 13.2, Annex C, Supplement 8, we focused on examining FY12 'site variable profit' per tonne of cement produced (unit site variable profit), a measure of profits based on taking a plant's revenues and deducting only its variable costs, but before the deduction of any site-level fixed costs, divisional-level and central cost allocations. We did this to minimize the impact of capacity utilization on the recovery of fixed costs since capacity utilization varied significantly between the various cement plants:
- (a) Lafarge Tarmac: FY12 unit site variable profit ranged from £[redacted] (Dunbar plant) to £[redacted] per tonne (Tunstead plant), with the Cauldon plant at £[redacted] and the Aberthaw plant at £[redacted]. Site variable profit margins were the [redacted] for the Tunstead plant at [redacted] per cent, followed by the Cauldon plant at [redacted] per cent, and then the Aberthaw and Dunbar plants at [redacted] per cent and [redacted] per cent respectively.
- (b) Hanson: FY12 unit site variable profit ranged from £[redacted] (Padeswood plant) with a [redacted] per cent margin, to £[redacted] per tonne (Ketton) with a [redacted] per cent margin, with the Ribblesdale plant at £[redacted] with a [redacted] per cent margin.
- (c) Cemex: FY12 unit site variable profit was £[redacted] for the South Ferriby plant with a margin of [redacted] per cent, whilst it was £[redacted] for the Rugby plant, with a margin of [redacted] per cent.

Production and capacity information

Introduction

1. This supplement to Annex C provides information about production and dispatch volumes and clinker capacity utilization for each of the Top 3 cement producers' cement plants in GB.
2. In relation to capacity utilization, we focused on clinker production capacity utilization. However, a plant's cement production capacity is determined not only by its clinker production capacity, but also by its clinker grinding and cement blending capacities.
3. Table 1 illustrates how clinker production capacity utilization might differ from cement production capacity based on Lafarge Tarmac's four cement plants.

TABLE 1 Lafarge Tarmac: differences between clinker production capacity* and cement production capacity

	<i>per cent</i>		
	<i>Average</i> †	<i>2012</i>	<i>2013 (H1)</i>
<i>Grey cement capacity utilization by plant</i>			
Aberthaw plant	[X]	[X]	[X]
Cauldon plant	[X]	[X]	[X]
Dunbar plant	[X]	[X]	[X]
Tunstead plant	[X]	[X]	[X]
<i>Clinker capacity utilization by plant*</i>			
Aberthaw plant	[X]	[X]	[X]
Cauldon plant	[X]	[X]	[X]
Dunbar plant	[X]	[X]	[X]
Tunstead plant	[X]	[X]	[X]

Source: Lafarge Tarmac

*This calculation of clinker production capacity is also set out in Tables 2 and 3.

†Average utilization percentages were based on FY07 to FY11, with the exception of the Tunstead plant, which was for FY08 to FY11.

Lafarge Tarmac

4. Tables 2 and 3 below sets out for each of Lafarge Tarmac's cement plants, its clinker capacity, clinker and cement production volumes, cement volumes dispatched from the plant, kiln utilization and excess capacity, and the percentage of cement accounted for by clinker.

TABLE 2 Lafarge Tarmac: production and capacity data (Cauldon plant and Tunstead plant), FY10 to FY12

	Cauldon plant			Tunstead plant		
	2010	2011	2012	2010	2011	2012
<i>Total clinker capacity (kt)*</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker produced (kt)</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]
<i>Cement produced (kt)</i>						
Bulk cement	[X]	[X]	[X]	[X]	[X]	[X]
Bagged cement	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]
<i>Cement dispatched (kt)</i>						
Bulk cement	[X]	[X]	[X]	[X]	[X]	[X]
Bagged cement	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker capacity utilization (%)</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker excess capacity (%)</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker as % of cement</i>	[X]	[X]	[X]	[X]	[X]	[X]

Source: Lafarge Tarmac

*Where a cement plant has two kilns, total clinker capacity represents the sum of the maximum clinker production capacity of both kilns regardless of whether a kiln was active or mothballed during the period considered. Where a cement plant has only one kiln, Kiln 1 denotes the single active kiln, and Kiln 2 is not applicable.

Note: N/A = not applicable.

TABLE 3 Lafarge Tarmac: production and capacity data (Aberthaw plant and Dunbar plant), FY10 to FY12

	Aberthaw plant			Dunbar plant		
	2010	2011	2012	2010	2011	2012
<i>Total clinker capacity (kt)*</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker produced (kt)</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]
<i>Cement produced (kt)</i>						
Bulk cement	[X]	[X]	[X]	[X]	[X]	[X]
Bagged cement	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]
<i>Cement dispatched (kt)</i>						
Bulk cement	[X]	[X]	[X]	[X]	[X]	[X]
Bagged cement	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker capacity utilization (%)</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker excess capacity (%)</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker as % of cement</i>	[X]	[X]	[X]	[X]	[X]	[X]

Source: Lafarge Tarmac.

*Where a cement plant has two kilns, total clinker capacity represents the sum of the maximum clinker production capacity of both kilns regardless of whether a kiln was active or mothballed during the period considered. Where a cement plant has only one kiln, Kiln 1 denotes the single active kiln, and Kiln 2 is not applicable.

Note: N/A = not applicable.

Hanson

- Table 4 sets out for each of Hanson's cement plants its clinker capacity, clinker and cement production volumes, cement volumes dispatched from the plant, kiln utilization and excess capacity, and the percentage of cement accounted for by clinker.

TABLE 4 Hanson: production and capacity data, FY10 to FY12

	Ketton plant*			Padeswood plant			Ribblesdale plant		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
<i>Total clinker capacity (kt)†</i>									
Kiln 1‡	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2‡	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker produced (kt)</i>									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Cement produced (kt)</i>									
Bulk cement	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Bagged cement	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Cement dispatched (kt)</i>									
Bulk cement	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Bagged cement	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker capacity utilization (%)</i>									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker excess capacity (%)</i>									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker as % of cement</i>	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: Hanson.

*Kiln 2 (as labelled by us) at the Ketton plant was mothballed for the whole year during the period under consideration, ie FY10 to FY12 (both years inclusive).

†Where a cement plant has two kilns, total clinker capacity represents the sum of the maximum clinker production capacity of both kilns regardless of whether a kiln was active or mothballed during the period considered. Where a cement plant has only one kiln, Kiln 1 denotes the single active kiln, and Kiln 2 is not applicable.

‡Hanson told us that each kiln's clinker production capacity was based on the 'hypothetical maximum capacity' based on its ultimate parent company, HeidelbergCement AG's, calculations, ie kiln clinker output (tonnes per day) x a 'Reliability Coefficient' x 365 days (less any planned maintenance). [X]

Notes:

1. N/A = not applicable.
2. Where cells are shaded in grey, these show when the kiln was mothballed for the whole year.

Cemex

6. Table 5 sets out for each of Cemex's cement plants its clinker capacity, clinker and cement production volumes, cement volumes dispatched from the plant, kiln utilization and excess capacity, and the percentage of cement accounted for by clinker.

TABLE 5 **Cemex: production and capacity data, FY10 to FY12**

	<i>Rugby plant</i>			<i>South Ferriby plant*</i>			<i>Tilbury grinding station</i>		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
<i>Total clinker capacity (kt)†</i>									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker produced (kt)</i>									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Cement produced (kt)</i>									
Bulk cement	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Bagged cement	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Cement dispatched (kt)</i>									
Bulk cement	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Bagged cement	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker capacity utilization (%)</i>									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker excess capacity (%)</i>									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Clinker as % of cement</i>	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: Cemex.

*At the South Ferriby plant, Kiln 1 (as labelled by us) was mothballed for the whole year in FY10 and FY11. In FY12, Kiln 1 was brought back into operation during FY12 on [X]. Kiln 2 (as labelled by us) was mothballed from [X].

†Where a cement plant has two kilns, total clinker capacity represents the sum of the maximum clinker production capacity of both kilns regardless of whether a kiln was active or mothballed during the period considered. Where a cement plant has only one kiln, Kiln 1 denotes the single active kiln, and Kiln 2 is not applicable.

Notes:

1. N/A = not applicable.

2. Where cells are shaded in grey, these show when the kiln was mothballed for the whole year. Where cells are shaded in turquoise, these show when the kiln was mothballed for only part of the year.

Treatment of latent capacity

Introduction

1. This supplement to Annex C sets out our assessment of how we should treat, or take into account, latent capacity in the context of this remedy. It sets out:
 - (a) the views of parties on latent capacity in the context of our remedy; and
 - (b) our assessment and conclusions on how mothballed and permitted capacity should be treated.
2. We identified two types of latent capacity: (a) production capacity that has already been built but remains inactive (mothballed capacity); and (b) proposals for the construction of additional cement production capacity that has already received planning permission (permitted capacity).
3. We considered that latent capacity might be a relevant consideration for this remedy for the following reasons:
 - (a) The total size of latent capacity available in GB is significant and comprises both mothballed and permitted capacity. Therefore, bringing latent capacity into operation would be likely to have a significant impact on the structure of the GB cement markets in the medium to long term.
 - (b) All latent capacity is currently only available to the firms within the coordinating group, where Hanson and Cemex each owns a mothballed kiln, and Lafarge Tarmac has planning permissions to construct a second kiln at its Tunstead plant (with capacity to produce 1 Mt of cement), and to construct a new cement plant at Medway, Kent (with capacity to produce 1.4 Mt of cement).¹
 - (c) In our Remedies Notice, we noted that latent capacity might enable a Top 3 cement producer to replace any production capacity forgone through a cement plant divestiture remedy in order to try and re-establish its market position.²

Views of parties on latent capacity

4. We asked parties whether we should focus our divestiture remedy only on current production capacity, or whether latent capacity should also be considered and, if so, what weight we should place on it.
5. Aggregate Industries told us that [REDACTED].³
6. Cemex told us that it needed to retain a certain amount of latent capacity in order to cope with any potential upturn in the market, and therefore the CC should not focus a divestiture solely on latent capacity. It added that although it was not technically diffi-

¹ Remedies Notice, Appendix A.

² *ibid*, paragraph 27.

³ Summary of response hearing with Aggregate Industries, paragraph 9.

cult to bring mothballed capacity online at a cement plant such as South Ferriby, it would be very expensive.⁴

7. Breedon Aggregates told us that it would be unlikely to consider building a new cement plant or acquiring a site with planning permission for a plant as it would be difficult for it to justify the costs involved.⁵
8. MI told us that latent capacity within an existing site would be less expensive to reinstate than an entire plant situated away from the centre of GB. It also told us that whilst latent capacity should not form part of the remedy package, it would be material if a Major that was ordered to divest a central cement plant had other latent capacity proximate to it which could be brought back into operation.⁶
9. Brett Group told us that it considered latent capacity to be only one step away from being current capacity and therefore it was necessary to consider latent capacity when assessing the balance of market supply and demand.⁷ It added that the planning permission for a new cement plant in the Medway, Kent, [REDACTED].⁸
10. The OFT told us that the extent to which any latent capacity should be divested ought to depend in part on its location, eg if a whole cement plant, or almost a whole plant, had been mothballed, it might still be a viable candidate for divestiture if it was situated in the right location, or had assured contracts that could be supplied once the mothballed capacity had been reactivated.

Our assessment and conclusions on treatment of latent capacity

11. As part of our assessment, we asked each of the Top 3 cement producers to provide details about their plans for their respective latent capacity, including the likely time-scales and costs to bring them into production.
12. Hanson told us that it had [REDACTED]. In relation to the timescale and costs to bring its mothballed kiln into production:
 - (a) Hanson estimated that it would take at [REDACTED], and that this included the time to install and commission the new equipment, as well as the time to re-employ and train staff. It added that the mothballed kiln had been mothballed [REDACTED], and therefore [REDACTED].
 - (b) In terms of the total cost to reactivate the mothballed kiln, Hanson estimated this to be at least £[REDACTED] including any contingency.
13. Hanson told us that without some form of latent capacity (ie a mothballed kiln in its case), its ability to compete in the market and expand would be significantly reduced.⁹ It also argued that it would be difficult to assess the latent capacity of its competitors, given that the lead time for reactivating a mothballed kiln depended on how long it had been out of service, eg the engineering requirements were particularly demanding where capacity had been mothballed for five or six years, [REDACTED].¹⁰

⁴ Summary of response hearing with Cemex, paragraph 24.

⁵ Summary of response hearing with Breedon Aggregates, paragraph 11.

⁶ Summary of response hearing with MI and HCM, paragraph 23.

⁷ Summary of response hearing with Brett Group, paragraph 30.

⁸ *ibid*, paragraph 9.

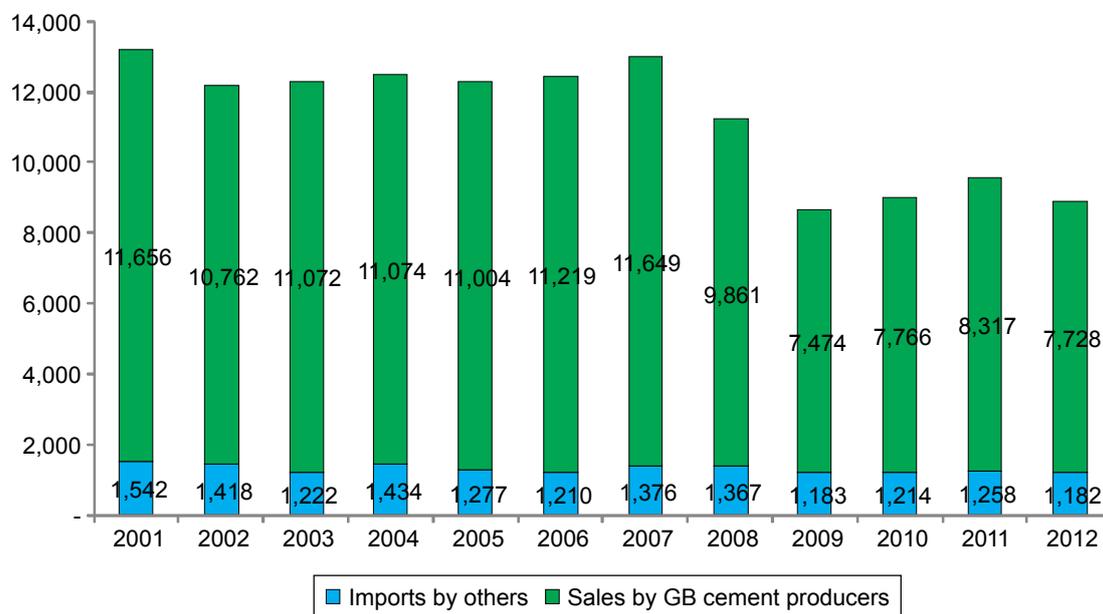
⁹ Summary of first response hearing with Hanson, paragraph 21.

¹⁰ *ibid*, paragraph 22.

14. Cemex told us that it had no plans or existing planning permission to expand capacity at its existing cement operations' sites. In relation to the timescale and cost to reactivate the mothballed kiln at its South Ferriby plant:
 - (a) Cemex estimated that it would take around [redacted] months to start clinker production and that most of this related to sourcing parts to the site.
 - (b) The total repair costs required to reactivate the mothballed kiln was estimated at just over £[redacted], with over half (£[redacted]) relating to estimated maintenance overhaul costs.
15. Lafarge Tarmac told [redacted].
16. In relation to Lafarge Tarmac's permitted capacity to construct a new cement plant on a greenfield site at Medway,¹¹ it told us that [redacted].¹²
17. In relation to the likely timescale and cost to construct Lafarge Tarmac's permitted capacity at its Tunstead plant: [redacted].
18. Based on the views of parties, including the information provided by the Top 3 cement producers, we considered that given 2012 market demand in GB of 8.9 Mt, of which 1.2 Mt (around 13 per cent) was accounted for by importers without a GB cement plant, when taken against total GB cement production capacity that is currently active, it would be unlikely that any latent capacity would be brought into production in the short term given the current market climate. In Figure 1, we show the annual demand (in Mt) for cement in GB between 2001 and 2012.

FIGURE 1

GB cement sales volumes (including all imports) (in kt)



Source: MPA.

Note: Imports by the GB cement producers form part of 'sales by GB cement producers'.

¹¹ Summary of response hearing with Lafarge Tarmac, paragraph 22.

¹² *ibid*, paragraph 22.

19. In relation to market outlook:
- (a) MI told us that it expected cement volumes in the market to grow from around [X] Mt a year in the UK.¹³
 - (b) Hanson told us that it expected cement volumes to grow at a rate of some 3 to 4 per cent a year for the next few years.¹⁴
 - (c) Lafarge Tarmac told us that it could not see the market significantly improving over the next two years, and that production was higher in 2007.¹⁵
20. On the basis that cement demand is derived from the demand for products that use cement in its production, eg RMX and other concrete products, BDS had forecast that concrete demand would fall by 12 per cent in 2012 and stay flat during 2013, but increase by 5 and 6 per cent in 2014 and 2015 respectively, with growth in demand increasing largely on the back of major construction projects.¹⁶
21. Based on monthly data from the MPA on GB cement sales up to and including September 2013, we noted that year-on-year sales have slowly increased since end-March 2013. However, given that current annual active GB cement production capacity is 9.3 Mt compared with annual GB demand (based on 2012 data) of 8.9 Mt, we considered that there remained uncertainty in relation to market outlook that would make it difficult to ascertain whether there would be a requirement for any latent capacity in the near future.
22. In relation to permitted capacity, given the forward-looking nature of our assessment of remedies, we considered whether there was any merit in a remedy involving both the divestiture of a cement plant and a requirement for Lafarge Tarmac to relinquish its option to construct a new cement plant at the Medway. Whilst we considered that there may be long-term value to Lafarge Tarmac in holding the option, especially given its location in the South-East, given the current market climate and the uncertainty in relation to when a significant upturn might be expected, we considered it unlikely that a cement plant at the Medway would be brought into production in the near future. Therefore, when determining which cement plants were suitable as a basis for divestiture, we did not take permitted capacity into account.
23. On this basis, we focused on active capacity when determining which cement plants should be selected for possible divestiture, but given its potential significance (notwithstanding their low likelihood of being brought into production), we took mothballed and permitted capacity into account only to examine their potential impact on market structure in the medium to long term (see Appendix 13.2, Annex F).

¹³ [Summary of response hearing with MI and HCM](#), paragraph 23.

¹⁴ [Remedies Notice response from Hanson](#), paragraph 3.7.

¹⁵ [Summary of response hearing with Lafarge Tarmac](#), paragraph 22.

¹⁶ BDS report, *Estimated market shares of ready mixed concrete companies in Great Britain (2011)*, July 2012.

Distribution capabilities of cement plants

Introduction

1. This supplement to Annex C sets out:
 - (a) details of the rail distribution capabilities of the Top 3 cement producers' rail-linked cement plants (where applicable);
 - (b) the volumes transported from each of the Top 3 cement producers' cement plants to rail-linked (where applicable) and non-rail-linked depots; and
 - (c) the estimated capital cost required to give a rail connection to those cement plants that are not rail-linked.

Details of rail-linked cement plants

2. In relation to the rail distribution capabilities of the Top 3 cement producers' cement plants:
 - (a) Lafarge Tarmac told us that its Dunbar and Tunstead plants each had an established rail-link connection.
 - (b) Hanson told us that its Ketton and Ribblesdale plants each had a completed rail-link connection.
 - (c) Cemex told us that none of its two cement plants were rail-linked and did not operate any rail-linked depots.
3. Maps showing the locations of the depots of the Top 3 cement producers are set out in Appendix 13.2, Annex B, Figures 2 to 4.

Volumes transported to depots (rail-linked and non-rail-linked)

4. We looked at the significance of cement volumes being transported through rail-linked and non-rail-linked depots.
5. Table 1 shows the historic annual FY12 volumes of cement that were transported by each of Lafarge Tarmac's cement plants to its depots (both rail-linked and non-rail-linked) in GB. We note that Table 1 was based on Lafarge's data for 2012 and the depots it operated prior to the formation of Lafarge Tarmac in January 2013, when its Dewsbury, Theale and Walsall depots were divested to HCM.

TABLE 1 Lafarge Tarmac: FY12 cement volumes* from dispatching cement plant to depots

	kt			
	Aberthaw plant	Cauldon plant	Dunbar plant	Tunstead plant
<i>Rail-linked depots</i>				
Aberdeen	[X]	[X]	[X]	[X]
Carlisle	[X]	[X]	[X]	[X]
Dewsbury	[X]	[X]	[X]	[X]
Inverness	[X]	[X]	[X]	[X]
Liskeard*	[X]	[X]	[X]	[X]
ScotAsh	[X]	[X]	[X]	[X]
Seaham	[X]	[X]	[X]	[X]
Theale*	[X]	[X]	[X]	[X]
Thurrock*	[X]	[X]	[X]	[X]
Uddingston	[X]	[X]	[X]	[X]
Westbury*	[X]	[X]	[X]	[X]
Walsall	[X]	[X]	[X]	[X]
Leeds	[X]	[X]	[X]	[X]
Willesden	[X]	[X]	[X]	[X]
<i>Non-rail-linked depots</i>				
Berwick Docks†	[X]	[X]	[X]	[X]
Coleshill	[X]	[X]	[X]	[X]
Exning	[X]	[X]	[X]	[X]
Liskeard*	[X]	[X]	[X]	[X]
Colnbrook†	[X]	[X]	[X]	[X]
Tolworth†	[X]	[X]	[X]	[X]
Steeley†	[X]	[X]	[X]	[X]
Theale*	[X]	[X]	[X]	[X]
Thurrock*	[X]	[X]	[X]	[X]
Vectis	[X]	[X]	[X]	[X]
Westbury*	[X]	[X]	[X]	[X]
Liverpool‡	[X]	[X]	[X]	[X]
<i>Depots</i>				
Number of rail-linked depots used	[X]	[X]	[X]	[X]
Number of non-rail-linked depots used	[X]	[X]	[X]	[X]
Total cement dispatched (kt)	[X]	[X]	[X]	[X]
% dispatched to rail-linked depot	[X]	[X]	[X]	[X]
% dispatched to non-rail-linked depot	[X]	[X]	[X]	[X]

Source: Lafarge Tarmac

*The Liskeard, Theale, Thurrock and Westbury depots are both rail-linked depots and used as non-rail-linked depots (ie receives deliveries by road transport) by the Aberthaw plant. The Westbury depot is also used by the Cauldon plant.

†[X]

‡Lafarge Tarmac told us that it believed the Liverpool depot was on a site that was under redevelopment into residential properties.

Notes:

1. The Dewsbury, Theale and Walsall depots were divested to HCM in January 2013.
2. N/A = not applicable.

6. In its response to the provisional decision on remedies, Lafarge Tarmac noted the following in relation to Table 1 above:

- (a) The Cauldon plant was currently linked to Exning and Coleshill, and the Tunstead plant was linked to Westbury, Willesden and West Thurrock.
- (b) The Barnstone facility should not be characterized as a depot, as it was a 'specialist production facility' that produced only packed value-added cement products, and received cement used in the manufacture of these products.

- (c) The West Thurrock depot was not linked to the Cauldon plant, and was in fact a rail-linked depot used primarily by Lafarge Tarmac as part of its packed cement business.¹
7. Based on Table 1 above, Lafarge Tarmac's Dunbar plant transported [%] per cent (or [%] kt) of its total dispatched volumes through six rail-linked depots, compared with [%] per cent (or [%] kt) for the Tunstead plant through three rail-linked depots. We noted that each rail-linked depot was only supplied by one cement plant. Only [%] and [%] per cent of their respective volumes were transported through their non-rail-linked depots. During 2012, the Liskeard, Theale, Thurrock and Westbury depots, all of which are rail-linked depots, were also used as non-rail-linked depots (ie received deliveries by road transport) by the Aberthaw plant. We note that of these three depots, the Theale depot was divested to HCM.
 8. Based on Table 1 above, in relation to Lafarge Tarmac's cement plants without a rail connection, its Aberthaw and Cauldon plants respectively transported [%] and [%] per cent of their total dispatched volumes through their depots. The Aberthaw plant used [%] depots during FY12, whilst the Cauldon plant used [%]. The key depot which handled the most volumes for the Aberthaw plant was the Westbury depot, and for the Cauldon plant, the Coleshill depot. However, we noted that both the Aberthaw and Cauldon plants shared the use of the Vectis depot and the Westbury depot. Whilst the Aberthaw plant transported more volumes through both of these depots than the Cauldon plant, the Cauldon plant still transported [%] kt through the Westbury depot (compared with [%] kt for the Aberthaw plant).
 9. Lafarge Tarmac told us that its depot operations were predominantly focused on serving external customers, and that around 80 per cent of daily weekday bulk cement road dispatches to customers from depots were made between 6 am and 12 noon, and that this six-hour time slot represented the 'peak period' of operation for a depot or dispatch location. During this peak period, it told us that the number of loading point and vehicle loading times were likely to be the main operational constraints on depot throughput, where typically a 30-tonne cement tanker could take 15 to 20 minutes to load. It told us that in a wider operating context, there may also be restrictions on a depot's operating hours.
 10. Table 2 below shows the annual FY12 volumes of cement that were transported by each of Hanson's cement plants to its depots (both rail-linked and non-rail-linked) in GB.

¹ Lafarge Tarmac told us that the volumes transported from the Cauldon plant through West Thurrock occurred as a 'one-off' when the Cauldon plant was being used as a back-up plant. It told us that in 2011, West Thurrock handled [%] tonnes from Cauldon out of more than [%] kt handled by West Thurrock in total. In 2012, West Thurrock handled [%] tonnes of packed product from Cauldon, out of total dispatched volumes of [%] kt. Source: [Lafarge Tarmac response to the provisional decision on remedies](#), paragraphs 40–43 (11 November 2013).

TABLE 2 Hanson: FY12 cement volumes from dispatching cement plant to depots

	kt		
	Ketton plant	Padeswood plant	Ribblesdale plant
<i>Rail-linked depots</i>			
King's Cross Powder Terminal*	[X]	[X]	[X]
Clyde Powder Terminal	[X]	[X]	[X]
<i>Non-rail-linked depots</i>			
Avonmouth Powder Terminal†	[X]	[X]	[X]
Avonmouth Trailer Park	[X]	[X]	[X]
Bradford Depot	[X]	[X]	[X]
Clyde Trailer Park	[X]	[X]	[X]
Middlesbrough Depot	[X]	[X]	[X]
Purfleet GGBS production	[X]	[X]	[X]
<i>Depots</i>			
Number of rail-linked depots used	[X]	[X]	[X]
Number of non-rail-linked depots used	[X]	[X]	[X]
Total cement dispatched (kt)	[X]	[X]	[X]
% dispatched to rail-linked depot	[X]	[X]	[X]
% dispatched to non-rail-linked depot	[X]	[X]	[X]

Source: Hanson.

*[X]

†Hanson told us that it was currently constructing a new rail-linked depot at Avonmouth (currently a non-rail-linked depot), with an annual capacity of around [X] kt and storage capacity of around [X] kt. It added that similar to its King's Cross depot, it would have a loading capacity of two trucks per lane, with two lanes, and that the maximum train size was 1.4 kt, but was currently 1.1 kt.

Note: N/A = not applicable.

11. Based on Table 2 above, Hanson operates two rail-linked depots, where:
 - (a) its Ketton plant uses [X] (which handled [X] per cent of total cement volumes dispatched from the plant during FY12); and
 - (b) its Ribblesdale plant uses [X] (which handled [X] per cent of total cement volumes dispatched from the plant during FY12).
12. As shown in Table 2 above, all three of its cement plants use two non-rail-linked depots each. Only Hanson's [X]. Volumes handled by non-rail-linked depots were [X] for Hanson's rail-linked plants, at [X] and [X] per cent for the Ketton and Ribblesdale plants respectively. However, this figure was [X] per cent for the Padeswood plant, which does not have a rail connection.
13. Table 3 shows the annual FY12 volumes of cement that were transported by each of Cemex's cement plants to its depots (non-rail-linked) in GB.

added that one possible option was to use the recently restored heritage railway line (Moorland and City railway) that connected nearby Caudon Low with the mainline rail network at Stoke. It estimated that the indicative cost of this option would be around £[redacted] million to build a rail spur from the heritage line into the site, as well as enabling rail loading capabilities at the plant, and take around two to three years to complete. However, under this option, it told us that due to restrictions on freight access to the heritage line, outbound cement volumes would be limited to around 100 kt a year, and that this would provide the Caudon plant with only very limited rail-connected capacity.

19. Whilst this feasibility study estimated that the cost of creating a branch line into the Caudon plant [redacted], another option was to deliver the cement from the Caudon plant by road to the railhead, which would incur a lower capital cost figure of around £[redacted] million. [redacted] estimated an investment payback period of [redacted].
20. However, we also noted that this was not the only option available to the Caudon plant to have a rail connection, and [redacted] using a loading facility located on Tarmac's site, that would enable around [redacted] of cement volumes to be transported by rail from the Caudon plant to East Anglia and Birmingham. This proposal was estimated to cost around £[redacted].

Hanson

21. Hanson told us that its Padeswood plant [redacted].

Cemex

22. Cemex told us that none of its cement plants were rail-linked and it did not own any rail-linked depots.
23. In relation to its Rugby plant, Cemex told us that it had on several occasions evaluated the cost of building a rail distribution capability into its plant, but concluded each time that it would be uneconomic to do so since the returns did not justify the significant investment that would be required. It estimated that the capital cost would be at least £[redacted] million, but added that this did not include the additional capital costs that would be required to procure the necessary network of rail-linked depots to allow for the onward distribution of cement. It told us that whilst there was a rail spur from the nearby West Coast Main Line near the Rugby plant, it was situated on the other side of the new Rugby Western Relief Road and a disused quarry, which meant that cement would have to be transported over a considerable distance to a new rail loading facility. It added that there were other obstacles including the current condition of the siding (next to which a new rail loading facility would have to be built) given its disuse; 'significant obstacles' in relation to obtaining planning permission, eg the close proximity of the site in question to residential areas; and obtaining the requisite consent from Network Rail.
24. In relation to its South Ferriby plant, Cemex told us that since the nearest railway line was around 6 miles away (as the crow flies), it never conducted an investigation into 'rail enabling' its plant. It also told us that given the small overall capacity of the plant, it would be 'distinctly unattractive' to rail-link the South Ferriby plant, as the volumes produced were likely to be insufficient to cover the significant capital outlay and risk to provide an investor with any kind of return. However, based on its previous projects, it estimated that the capital cost alone would be at least £[redacted] million (excluding the cost of procuring any rail-linked depots and land on which to install a new line). It

added that it anticipated 'significant obstacles' in relation to obtaining planning permission and the requisite consent from Network Rail.

25. We concluded that it would be essential for any divestiture of a rail-linked cement plant to be accompanied by divestiture of the rail-linked depots on its rail network, in order to enable a rail-linked cement plant to make effective use of its rail connection.

Cement customer catchment areas

Introduction

1. This supplement to Annex C sets out our assessment of:
 - (a) the customer catchment areas of each GB cement plant owned by Lafarge Tarmac and Hanson, where we consider each cement plant's geographic reach and the density of demand covered within each catchment area; and
 - (b) the overlap of customer catchment areas (and the significance of such overlaps in terms of a GB cement producer's total volumes) between the different GB cement producers.
2. In Section 7, we found that the geographic areas over which cement could be transported were quite large, eg up to 100 miles, and that each of the four GB cement producers sold cement in each GB region.¹ A cement plant divestiture will be more effective if the cement plant which is divested has the ability to serve a wide customer base and compete on a wide geographic area. Therefore, in order to inform our assessment of the effectiveness of divesting particular cement plants, we have undertaken an analysis of their customer catchment areas.
3. Our catchment area analysis is based on the maximum distance over which 50, 80 and 90 per cent of each cement plant's sales are delivered to the customers in GB. A customer catchment area includes both the first leg of a journey (from a cement plant to a depot, either by rail or road) and the second leg (from a depot to the customer), where deliveries are made from a cement plant direct to the customer or from a depot. This analysis is based on total delivered sales of cement volumes (both internal and external sales) made in 2011.
4. We based our assessment on 2011 transactions data (which was the latest transactions data available to us) for the four GB cement producers as they were prior to the formation of Lafarge Tarmac and HCM, which both commenced trading from 7 January 2013. However, for the purposes of our analysis, we have presented our results based on the current market structure, ie where Lafarge Tarmac owns the Tunstead plant but not the Hope plant. We therefore note that the results of our analysis may be affected by the fact that during 2011, the Tunstead plant was operated as a stand-alone cement plant under Tarmac's ownership.
5. Whilst we aimed to look at customer catchment areas for all of the Top 3 cement producers, we have not been able to perform this analysis for Cemex due to a lack of the relevant and necessary data.
6. The focus of much of the analysis contained in this supplement to Annex C will be on two cement plants owned by Lafarge Tarmac at the centre of our cement plant divestiture remedy, namely the Cauldon and Tunstead plants.
7. This supplement is structured as follows: first, we present maps which show the locations of Lafarge Tarmac's cement plants followed by some descriptive analysis of cement sales made by each cement plant in GB. We then describe the data and

¹ Paragraph 7.22.

methodology of our catchment area analysis and present the results. We also present Hanson’s catchment area analysis.

Our assessment of customer catchment areas

Lafarge Tarmac

Locations of cement plants and sites

8. In Appendix 13.2, Annex B, Figures 1 and 2 present maps showing the locations of Lafarge Tarmac’s cement plants, depots and (if any) stand-alone grinding stations and import terminals in GB. Based on Appendix 13.2, Annex B, Figure 1, Lafarge Tarmac has one plant located in Scotland (Dunbar), one plant located in Wales (Aberthaw) and two cement plants located in the Midlands (Cauldon and Tunstead). Of these four cement plants, the Dunbar plant and the Tunstead plant are the only plants to have a rail connection.
9. Based on Appendix 13.2, Annex B, Figure 2, which shows the locations of Lafarge Tarmac’s other cement sites, the map shows a wide geographic coverage of cement sites located across GB. Based on 2011 transactions data, Lafarge and Tarmac owned 16 cement depots, of which 11 were rail-linked. With the divestiture of depots located in Walsall, Theale and Dewsbury to HCM (MI), Lafarge Tarmac currently owns 13 cement depots of which eight are currently rail-linked.

Descriptive analysis of sales

10. Table 1 shows the proportion of cement sales that leave the Aberthaw, Cauldon and Dunbar plants by rail and by road (the relevant data was not available for the Tunstead plant). For the Aberthaw and Cauldon plants, 100 per cent of their cement sales volumes are made by road. For the Dunbar plant, roughly 50 per cent of its cement sales volumes are made by rail and by road.

TABLE 1 Proportion of sales (in tonnes) that leave the plant by rail and road to supply the shipping facility

Cement plant	per cent	
	Rail	Road
Aberthaw	-	100.00
Cauldon	-	100.00
Dunbar	[X]	[X]

Source: CC calculations based on 2011 transactions data provided by Lafarge.

Note: This summary of data is not available for the Tunstead plant as Tarmac did not provide this information in its transactions data.

11. Table 2 shows the list of depots to which Lafarge Tarmac transports cement by rail from the Dunbar plant. In 2011, the Uddingston depot received the largest volumes of cement from the Dunbar plant at [X] tonnes, followed by the Seaham depot with [X] tonnes and the Inverness and Aberdeen depots with [X] and [X] tonnes respectively.

TABLE 2 List of depots where cement is transported by rail

Cement plant	Depot	tonnes
		Volume
Dunbar	Aberdeen	[REDACTED]
	Inverness	[REDACTED]
	Seaham Depot	[REDACTED]
	Uddingston	[REDACTED]

Source: CC calculations based on 2011 transactions data provided by Lafarge.

Note: This summary of data is not available for the Tunstead plant as Tarmac did not provide this information in its transactions data.

12. Table 3 shows the split of cement sales by type at each cement plant. The Tunstead and Cauldon plants have the [REDACTED] volume of bulk cement sales compared with the Aberthaw and Dunbar plants. The Cauldon plant has the [REDACTED] volume of bagged cement sales in 2011 and the Tunstead plant has the [REDACTED] volume of bagged cement sales compared to the Aberthaw and Dunbar plants. By cement type, the Cauldon and Tunstead plants have the [REDACTED] volume of [REDACTED] cement sales in 2011, but the Aberthaw and Dunbar plants have the [REDACTED] volume of [REDACTED] sales in 2011.

TABLE 3 Split sales from cement plants between bulk vs bagged and between different types of cement

Cement plant	Total bulk cement	Total bagged cement	tonnes				
			CEM I	CEM II	Bulk other	CEM I and other cement	Bagged + Limebond
Aberthaw	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Cauldon	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Dunbar	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tunstead	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC calculations based on 2011 transactions data provided by Lafarge Tarmac.

Note: The volumes presented in this table may not match the figures available in the 2011 transactions data as we dropped 1 per cent of the outliers based on price. For Lafarge, a total of 333 observations were dropped from the 2011 transactions data. For Tarmac, a total of 49 observations were dropped from the 2011 transactions data. We note that Lafarge Tarmac was not able to confirm the accuracy of our calculations because of our exclusion of these outliers, though we note that this should not affect the results materially given that only 1 per cent of the data was dropped.

13. Based on Table 4, which shows the proportion of cement sales that go through each depot depending on the source of supply from the cement plant:
- Cement depots located in Aberdeen, Inverness, Seaham and Uddingston have 100 per cent of their cement supplied from the Dunbar plant.
 - In the Midlands, the Cauldon plant supplies 100 per cent of the cement sold through the Exning and Coleshill depots, and roughly [REDACTED] and [REDACTED] per cent of the cement volumes sold through the Thurrock and Vectis depots respectively.
 - The Aberthaw plant supplies 100 per cent of the sales volumes sold through depots located at Liskeard and Theale and roughly less than [REDACTED] per cent of the cement sales volumes through the Thurrock and Vectis depots.

TABLE 4 Proportion of cement sales through each depot by source

Cement depot	Source of cement (plant)	per cent
		Volume concentration
Aberdeen	Dunbar	[X]
Inverness	Dunbar	[X]
Seaham Depot	Dunbar	[X]
Uddingston	Dunbar	[X]
Exning	Cauldon	[X]
Coleshill	Cauldon	[X]
Thurrock Blender	Aberthaw	[X]
Thurrock Blender	Cauldon	[X]
Liskeard	Aberthaw	[X]
Vectis	Aberthaw	[X]
Vectis	Cauldon	[X]
Theale Depot	Aberthaw	[X]

Source: CC calculations based on 2011 transactions data provided by Lafarge.

- Table 4 above excludes the analysis of the supply of cement from the Tunstead plant to the shipping facilities located in London, Walsall, Leeds and Liverpool. All of these cement sites were formerly owned by Tarmac prior to its JV with Lafarge. We have assumed that prior to this JV, 100 per cent of the cement sold through these depots was supplied from the Tunstead plant.
- Table 5 shows the total number of external sales customers that have purchased cement from each plant. This table shows that the Cauldon plant made cement sales to [X] customers, followed by the Tunstead plant which made cement sales to [X] customers in 2011. The Aberthaw and Dunbar plants made cement sales to [X] and [X] customers respectively in 2011.

TABLE 5 Total numbers of customers at each cement plant in 2011 (external sales)

Cement plant	External sales
Aberthaw	[X]
Cauldon	[X]
Dunbar	[X]
Tunstead	[X]

Source: CC calculations based on 2011 transactions data provided by Lafarge Tarmac.

Note: For the Tunstead plant, the variable used to identify the total number of customers is called 'payer_id' in the transactions data submitted by Tarmac.

- Tables 6 to 9 present the volume concentrations for the top 20 customers at each cement plant. These tables show the array of customers that have purchased cement that was produced at each cement plant.
- Table 6 presents the volume concentration for the top 20 customers at the Aberthaw plant based on all internal and external sales. Table 6 shows that [X] accounted for around [X] per cent of the total cement sales volumes at the Aberthaw plant. Of the Majors, [X] accounted for [X] per cent of the total sales volumes, followed by [X] ([X] per cent), [X] ([X] per cent) and [X] ([X] per cent).

TABLE 6 **Volume concentrations of top 20 customers at the Aberthaw plant, all sales**

<i>Customer name</i>	<i>Volume concentration %</i>
[REDACTED]	[REDACTED]

Source: CC calculations based on 2011 transactions data provided by Lafarge Tarmac.

18. Table 7 presents the volume concentration for the top 20 customers at the Cauldon plant based on all internal and external sales. This table shows that [REDACTED].

TABLE 7 **Volume concentrations of top 20 customers at the Cauldon plant, all sales**

<i>Customer name</i>	<i>Volume concentration %</i>
[REDACTED]	[REDACTED]

Source: CC calculations based on 2011 transactions data provided by Lafarge Tarmac.

19. Table 8 presents the volume concentration for the top 20 customers at the Dunbar plant based on all internal and external sales. This table shows that [REDACTED].

TABLE 8 **Volume concentrations of top 20 customers at the Dunbar plant, all sales**

<i>Customer name</i>	<i>Volume concentration %</i>
[REDACTED]	[REDACTED]

Source: CC calculations based on 2011 transactions data provided by Lafarge Tarmac.

20. Table 9 presents the volume concentration for the top 20 customers at the Tunstead plant. This table shows that [REDACTED].

TABLE 9 **Top 20 customers by volume concentration at the Tunstead plant, all sales**

<i>Customer name</i>	<i>Volume concentration %</i>
[REDACTED]	[REDACTED]

Source: CC calculations based on 2011 transactions data provided by Lafarge Tarmac.

Note: For the Tunstead plant, the variable used to identify the total number of customers is called 'payer_id' in the transactions data submitted by Tarmac.

21. From our analysis of the top 20 customers at each cement plant with particular focus on the Cauldon and Tunstead plants, we find that the Cauldon plant serves a wide mixture of customers, namely the Majors, [REDACTED] and [REDACTED], as well as other mid-tier and independent firms. At the Tunstead plant, our analysis shows that the majority of its sales have been made to [REDACTED] and [REDACTED], accounting for [REDACTED] per cent of total sales volumes in 2011.

Customer catchment area analysis

22. We undertook our customer catchment area analysis in order to understand the distances over which cement is delivered and the geographic coverage of a cement

plant in relation to its customers. We first describe the methodology and data used in this analysis before presenting our findings.

23. Our customer catchment area analysis examines the maximum distance over which 50, 80 and 90 per cent of each cement plant's sales volumes are delivered. We used transactions data for 2011 provided by Lafarge and Tarmac on total delivered sales of cement volumes (bulk and bagged) that were delivered to internal and external customers.
24. We use the radial (straight line) distances centred on each cement plant and calculate within which 50, 80 and 90 per cent of each cement plant's total sales volumes were delivered to customers. Our data comprises all active cement plants and depots (rail and non-rail-linked) that have delivered cement to all customers. To compute the customer catchment areas and delivery distances, we have only included delivered sales to customers and excluded collected sales.

Customer catchment area analysis results

Road and rail catchment areas

25. Table 10 and Figures 1 and 2 present our customer catchment area results. These results include both the first leg of a journey from the cement plant to a depot (either by rail or road), and the second leg from the depot to the customer, where deliveries are made from a cement plant or a depot direct to the customer. Cement deliveries from a depot are all made by road.

TABLE 10 Customer catchment area distances from cement plant to customers

Cement plant	miles		
	50	80	90
Aberthaw	[30]	[30]	[30]
Dunbar	[30]	[30]	[30]
Cauldon	[30]	[30]	[30]
Tunstead	[30]	[30]	[30]

Source: CC calculations based on 2011 transactions data provided by Lafarge Tarmac.

Note: Catchment area distances are in radial miles.

26. From Table 10 above, the 50 per cent catchment area distances for the Cauldon and Tunstead plants are similar; from the Cauldon plant, the catchment area is roughly [30] miles less than the catchment area distance from the Tunstead plant. The 80 per cent catchment area distances from both plants differ by roughly [30–40] miles. From the Cauldon plant, the 50 and 80 per cent catchment area distances are around [50–60] and [100–110] miles to the customer respectively. For the Tunstead plant, these catchment area distances are respectively around [50–60] and [130–140] miles. The larger 80 per cent catchment area for the Tunstead plant compared to the Cauldon plant is likely to be explained at least in part by the fact that the Tunstead plant is a rail-linked plant where cement can be delivered further to the customer.
27. The geographic coverage of the catchment area distances from Table 10 can be viewed for all cement plants in Figure 1, and for the Cauldon and Tunstead plants only in Figure 2. Figure 2 shows that even though the Cauldon plant is not a rail-linked plant, cement can be transported to customers at a similar distance from the plant in relation to the Tunstead plant (which is partially rail-linked) based on the 50 per cent catchment area. However, the 80 per cent catchment area for the Tunstead plant encapsulates the 80 and 90 per cent catchment areas from the

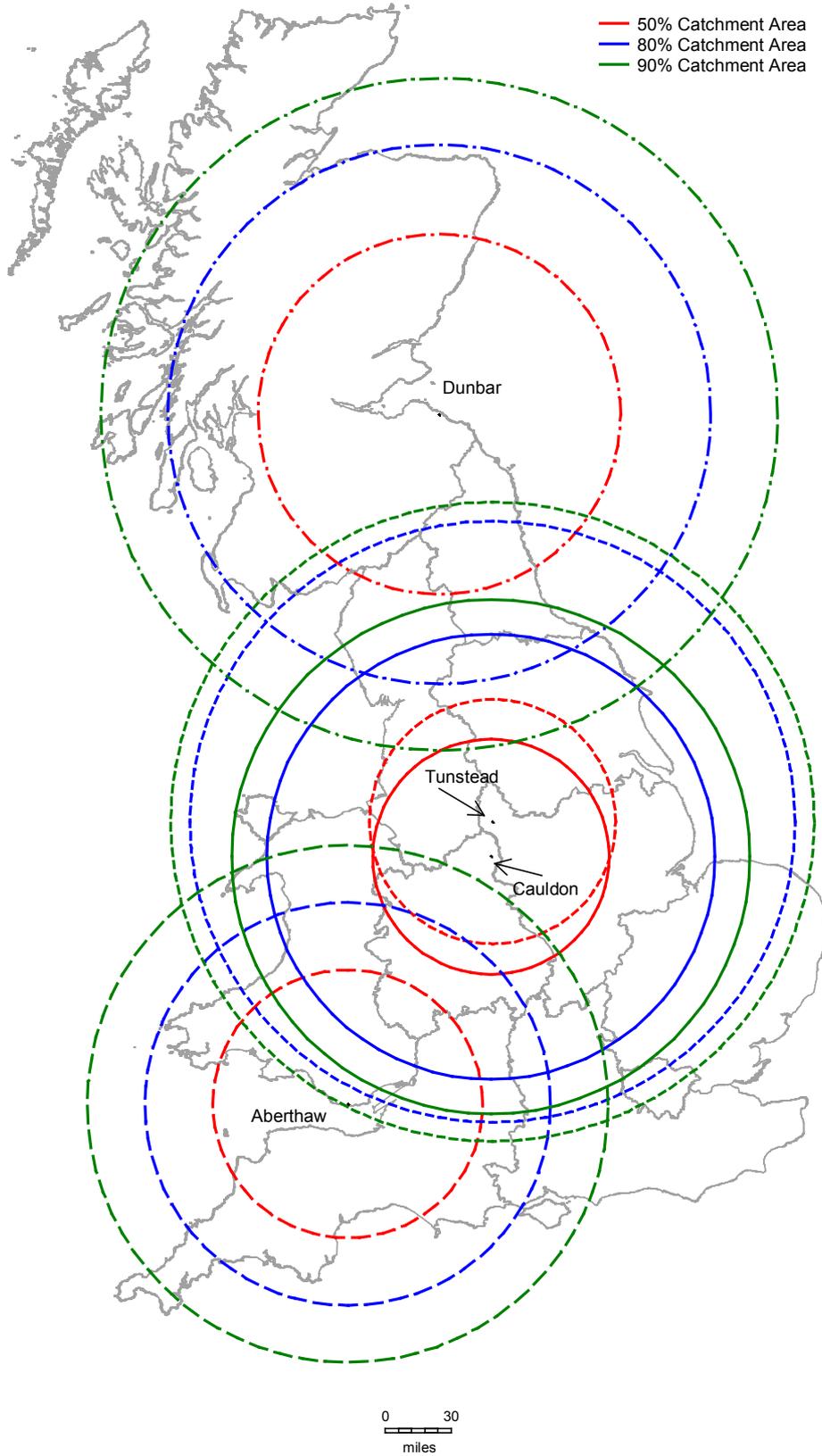
Cauldon plant. We note, however, that our analysis of customer catchment areas was based on 2011 data, during which Lafarge was operating both the Cauldon and Hope plants, both of which are located within the same region. Lafarge had told us that it was its strategy to use the Cauldon plant mainly for local sales, and use the Hope plant for more distant sales. Therefore, the fact that the Cauldon plant's 80 per cent and 90 per cent catchment areas tended to be smaller than the Tunstead plant may also be explained by Lafarge's strategy in relation to the Cauldon and Hope plants, and therefore does not necessarily mean that the Cauldon plant would not be able to compete for customers located further away than it used to serve in 2011.

28. For the Aberthaw plant, Figure 1 shows that the geographic coverage of the customer catchment areas covers most of the South-West and parts of the central regions of GB. The 50 and 80 per cent catchment area distances are [50–60] and [90–100] miles respectively.

FIGURE 1

Lafarge Tarmac: 50, 80 and 90 per cent catchment areas

Lafarge Tarmac: 50%, 80% & 90% Catchment Areas

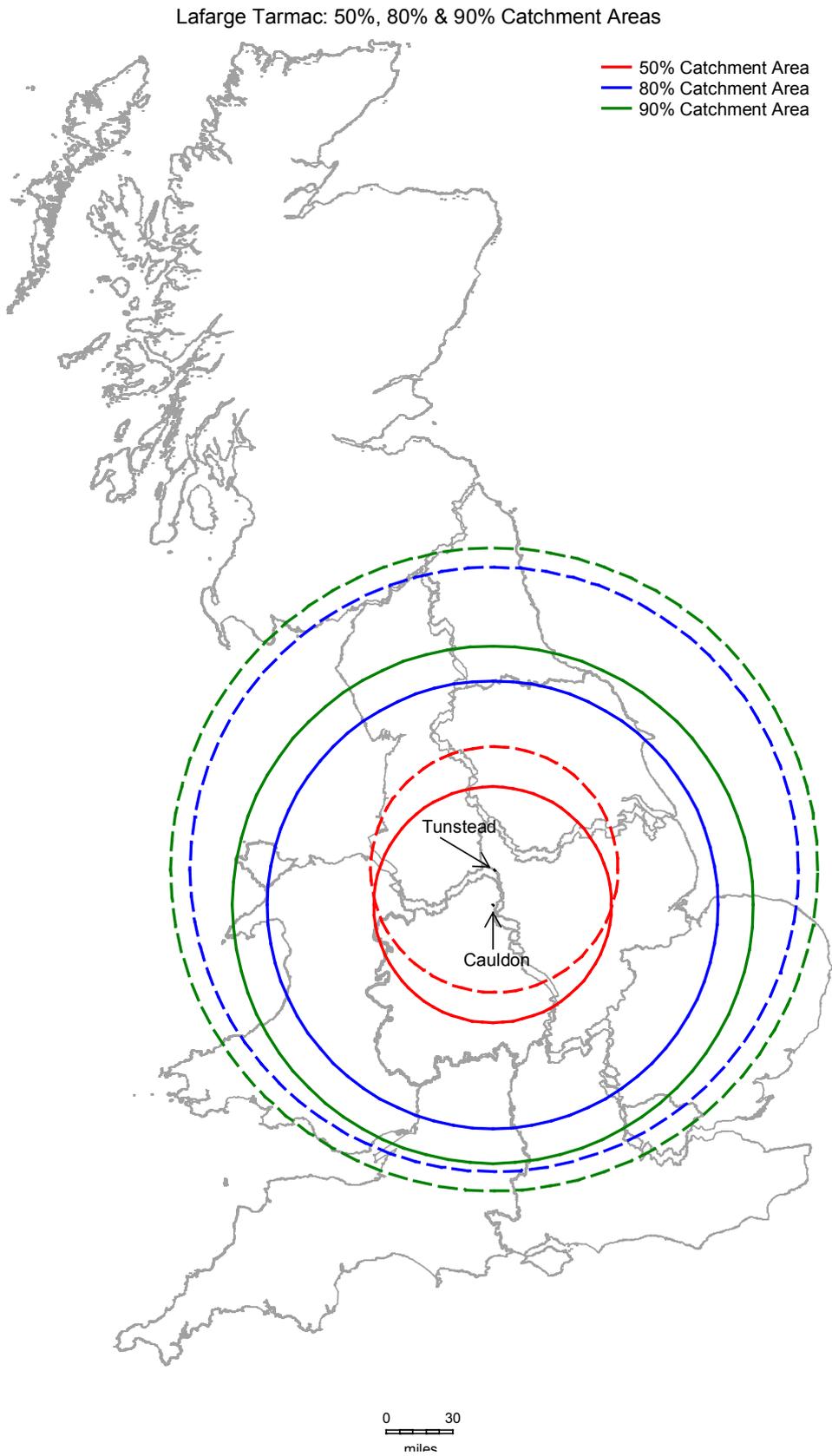


Source: Lafarge Tarmac (2011 transactions data).

Note: Catchment areas are based on radial distances. Table 10 provides the catchment area distances.

FIGURE 2

Lafarge Tarmac: 50, 80 and 90 per cent catchment areas



Source: Lafarge Tarmac (2011 transactions data)

Note: Catchment areas are based on radial distances. Table 10 provides the catchment area distances.

29. Based on Figure 1 above, the geographic coverage from the catchment area distances for the Dunbar plant shows larger coverage over the north of GB compared with the three plants located in southern GB. This is explained by the Dunbar plant being the only cement plant to deliver cement by rail and by road to its shipping facilities and therefore the cement can be delivered further. Table 10 shows that the 50 and 80 per cent catchment area distances are [80–90] and [120–130] miles respectively from the plant to the customer.

Rail catchment area results

30. Table 11 presents the rail catchment area distances from the cement plant to the shipping facilities. Currently, we are only able to present the results for the Dunbar plant. We are not able to present these results for the Tunstead plant as the method of delivery from the plant to the shipping facility was not provided by Tarmac (prior to the formation of Lafarge Tarmac) in its transactions data.
31. Table 11 shows that the Dunbar plant delivers cement by rail to depots located in Aberdeen, Inverness, Seaham and Uddingston. It also presents the rail catchment area distances to these depots from the Dunbar plant. Our results show the 50 and 80 per cent catchment area distances from the Dunbar plant to the depots are roughly [80–90] and [90–100] miles respectively.

TABLE 11 Rail catchment areas from cement plant to shipping facility

	<i>miles</i>		
<i>Cement plant</i>	50	80	90
Dunbar	[80–90]	[90–100]	[120–130]

Source: CC calculations based on 2011 transactions data provided by Lafarge Tarmac.

Note: These calculations are not available for the Tunstead plant as Tarmac did not provide this information in its transactions data.

32. Table 12 presents the catchment area distances around depots that receive their cement shipment from the plant by rail. The results show that the Aberdeen and Uddingston depots have smaller 50 and 80 per cent catchment area distances compared with the Inverness and Seaham depots.

TABLE 12 Catchment area distances around depots which receive cement by rail

	<i>miles</i>		
<i>Depot</i>	50	80	90
Aberdeen	[80–90]	[90–100]	[120–130]
Inverness	[120–130]	[130–140]	[140–150]
Seaham Depot	[120–130]	[130–140]	[140–150]
Uddingston	[80–90]	[90–100]	[120–130]

Source: CC calculations based on 2011 transactions data provided by Lafarge Tarmac.

Note: These calculations are not available for the Tunstead plant as Tarmac did not provide this information in its transactions data.

Catchment area results around depots

33. Table 13 presents the catchment area distances around the cement depots owned by Lafarge Tarmac (based on 2011 transactions data). This table also shows the cement plants which supplied each depot.

TABLE 13 Catchment area distances around depots

		<i>miles</i>		
		<i>All sales</i>		
<i>Cement plant</i>	<i>Depots</i>	<i>50</i>	<i>80</i>	<i>90</i>
Aberthaw	Thurrock Blender	[X]	[X]	[X]
	Barnstone Cem	[X]	[X]	[X]
	Liskeard	[X]	[X]	[X]
	Vectis	[X]	[X]	[X]
	Theale Depot	[X]	[X]	[X]
Cauldon	Exning	[X]	[X]	[X]
	Coleshill	[X]	[X]	[X]
	Thurrock Blender	[X]	[X]	[X]
	Barnstone Cem	[X]	[X]	[X]
	Vectis	[X]	[X]	[X]
Dunbar	Aberdeen	[X]	[X]	[X]
	Inverness	[X]	[X]	[X]
	Seaham Depot	[X]	[X]	[X]
	Uddingston	[X]	[X]	[X]
Tunstead	Leeds	[X]	[X]	[X]
	Liverpool	[X]	[X]	[X]
	London	[X]	[X]	[X]
	Walsall	[X]	[X]	[X]

Source: CC calculations based on 2011 transactions data provided by Lafarge Tarmac.

34. Table 13 shows that the Vectis depot has the smallest catchment area distances to the customer as the Vectis depot is located in the Isle of Wight. The Barnstone depot is not a cement depot but a blender and packing facility. The catchment area distances for this shipping facility are the largest based on all sales. Based on 2011 transactions data, the Cauldon plant supplied five depots and the Tunstead plant supplied four depots. All depots that have been supplied by these two plants are located around the central and southern regions of GB.

Conclusions on customer catchment areas for the Cauldon and Tunstead plants

35. This supplement to Annex C has presented our customer catchment area analysis of Lafarge Tarmac's cement plants, with particular focus on the Cauldon and Tunstead plants located in the Midlands based on 2011 transactions data.
36. Our main findings show that:
- The Cauldon plant had a higher volume of bagged cement sales in 2011 compared with the Tunstead plant.
 - The Cauldon plant had a higher number of customers, supplying [X] customers compared with only [X] customers for the Tunstead plant during 2011.
 - The Cauldon plant had a wider mix of customers based on our analysis of the top 20 customers in 2011 by volume concentration compared with the Tunstead plant.
 - Based on 80 per cent catchment area distances, the Cauldon plant, which is not a rail-linked plant, had a narrower catchment area than the Tunstead plant, which is partially rail-linked. However, the fact that the Cauldon plant had not served customers located further away may have been a result of Lafarge's strategy in relation to its Cauldon and Hope plants in 2011, as a multi-plant operator.

Hanson

37. Our catchment area analysis based on Hanson's transaction data for 2011 is presented below.²
38. Hanson's customer catchment area analysis is based on the straight line (radial) distance from the cement plant to the shipping facility for the first leg of the journey and road miles from the shipping facility to the customer for the second leg of the journey. The first leg of this journey was estimated by the CC because this distance was not provided.
39. Hanson has three active cement plants in GB in 2011 at Ketton, Padeswood and Ribblesdale. The Ketton and Ribblesdale plants are rail-linked plants.
40. Table 14 shows the proportion of cement sales that leave each plant by rail and by road to supply their shipping facilities:
- (a) For the Ketton plant, [X] per cent of its total sales volumes leave by rail and [X] per cent of its total sales volumes leave by road.
- (b) For the Ribblesdale plant, [X] per cent of its total sales volumes leave the plant by rail and [X] per cent of its total sales volumes leave the plant by road.
- (c) For the Padeswood plant, [X] per cent of its total sales volumes are made by road.
41. It should be noted that the results in Table 14 differ from the results presented in Table 1 above for Lafarge Tarmac's plants as Hanson make the majority of its cement sales directly from its plants.

TABLE 14 Proportion of sales (in tonnes) which leave the plant by rail and road to supply the shipping facilities

Cement plant	per cent	
	Rail	Road
Ketton	[X]	[X]
Padeswood	[X]	[X]
Ribblesdale	[X]	[X]

Source: CC calculations based on 2011 transactions data provided by Hanson.

42. Table 15 sets out the catchment area distances from the cement plant to its customers. It shows that the Padeswood plant has the [X] catchment area distances followed by the Ketton and Ribblesdale plants. These customer catchment areas can be viewed in Figure 3.

² We have dropped 1 per cent of the outliers based on price. A total of 199 observations were dropped from the 2011 transactions data.

TABLE 15 Catchment area distances from cement plant to customer

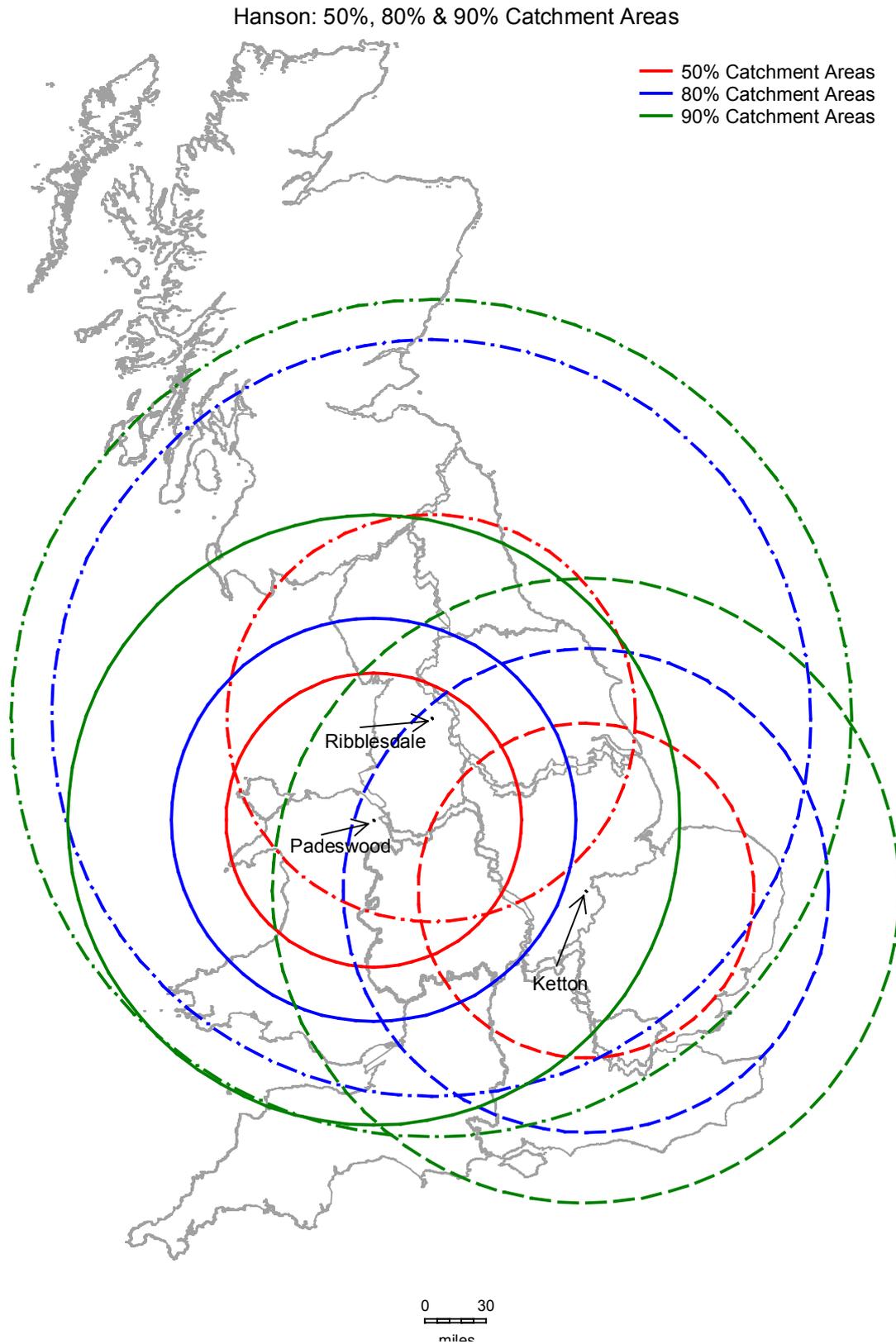
Cement plant	miles		
	50	80	90
Ketton	[X]	[X]	[X]
Padeswood	[X]	[X]	[X]
Ribblesdale	[X]	[X]	[X]

Source: CC calculations based on 2011 transactions data provided by Hanson.

Note: Catchment area distances are a combination of radial miles on the first leg of the journey from the cement plant to the shipping facility and road miles on the second leg of the journey from the shipping facility to the customer.

FIGURE 3

Hanson: 50, 80 and 90 per cent catchment areas



Source: Hanson (2011 transactions data).

Note: Catchment area distances are a combination of radial and road miles from the cement plant to the customer. Table 15 provides the catchment area distances.

Availability and procurement of raw materials

Introduction

1. This supplement to Annex C sets out, for the Top 3 cement producers, details of each of their cement plants' supply arrangements concerning their top five raw material requirements (by tonnage consumed in FY12).

Our assessment

2. For each of their top five raw materials (by cement plant), we looked at whether these raw materials were supplied internally or by third parties; their long-term availability, and where availability was potentially an issue, whether suitable alternatives could be cost-effectively sourced; and the implications of divestiture on existing raw material supply arrangements.

Lafarge Tarmac

3. Table 1 shows the top five raw materials consumed (by tonnage) by each of Lafarge Tarmac's four cement plants during FY12.

TABLE 1 **Lafarge Tarmac: availability and procurement of raw materials (top 5 by consumption in FY12)**

Raw material	Internal or external supply	Name of supplier	FY12 consumption (kt)	Current/ permitted availability*	Future availability†	Use of raw material	Implication of divestiture	Availability of cost-effective alternative
Aberthaw plant								
Limestone	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Limestone	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Air-cooled slag	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Celtic ash	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Limestone (20mm)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cauldon plant								
Limestone	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Shale	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
PFA	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Gypsum	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Sand	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Dunbar plant								
Limestone	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
PFA	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Sand	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Shale	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Gypsum	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Tunstead plant								
Limestone	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Slurry	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Marl	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Sand	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Gypsum	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: Lafarge Tarmac.

*Current permitted availability, where it is expressed in years, is based on current rates of production and/or existing suppliers.

†Future availability based on ability to increase raw material availability, eg through planning permissions.

‡Sourced externally during FY12, but now internal, ie part of Lafarge Tarmac from January 2013.

§[X]

¶Feasibility study into a second kiln at the Tunstead plant verified sand supply availability for at least double the existing kiln demand.

#[REDACTED]

~Lafarge Tarmac told us that it was likely that a significant part of the reserves at the Cauldon Low Quarry, which was located adjacent to the Cauldon Quarry, could be used for cement production at the Cauldon plant, subject to obtaining the required planning permissions. Lafarge Tarmac told us that the Cauldon Quarry had been granted 'in principle approval' to extend its limestone quarrying operations and that [REDACTED].

★Lafarge Tarmac told us that there was only one quarry linked to the Dunbar plant that could be generically labelled as the 'Dunbar Quarry', and that it was also known as the 'North East Quarry', as this was the section of the quarry that was currently being worked. It added that the north-west sector had been worked and was now undergoing restoration.

◆Lafarge Tarmac told us that there were many decades of proven and probable limestone reserves at the Tunstead Quarry to which it would reasonably expect to gain access going forwards such that it should not be necessary to bring in limestone from any other source for the economic life of the current cement plant.

4. Based on Table 1 above, the most heavily consumed raw material by each of Lafarge Tarmac's cement plants is limestone, which is, in all cases, supplied internally by its respective quarries. In relation to the production of clinker, the top two raw materials (by tonnage consumed), including limestone, are internally supplied. For the Aberthaw plant, these raw materials relate to limestone from two different quarries; for both the Cauldon and Dunbar plants, they relate to limestone and shale; and for the Tunstead plant, they relate to limestone and slurry.
5. Whilst PFA does not appear in Table 1 above for the Tunstead plant, the PFA that is used at each of Lafarge Tarmac's other three plants are sourced from three different JVs, namely CelticAsh, ProAsh and ScotAsh.
6. We also noticed that the supply of sand varied from being externally supplied to the Cauldon and Dunbar plants to being internally supplied to the Tunstead plant.
7. In relation to the availability of limestone, Table 1 above shows that:
 - (a) The Aberthaw plant currently has [REDACTED] years of reserves remaining at the Aberthaw Quarry with the ability to extend this by [REDACTED] years. It also has around [REDACTED] years of limestone reserves at its [REDACTED] (based on current consumption rates), but planning permission at the [REDACTED] expires on [REDACTED]. Lafarge Tarmac told us that its [REDACTED] and [REDACTED] (currently mothballed) used to supply limestone to the Aberthaw plant, and could be used again to supply limestone once reserves at the [REDACTED] became exhausted. It also told us that the [REDACTED] could continue to supply the balance of limestone required for the raw mix.
 - (b) The Cauldon plant sources both its limestone and shale from the Cauldon Quarry. In relation to its permitted limestone reserves, Lafarge Tarmac told us that the Cauldon Quarry had been granted 'in principle approval' to extend its limestone quarrying operations and that [REDACTED].³ In addition to the Cauldon Quarry, Lafarge Tarmac told us that it was likely that a significant part of the reserves at the Cauldon Low Quarry (located adjacent to the Cauldon Quarry) could be used to supply limestone to the Cauldon plant subject to obtaining the required planning permissions.
 - (c) The Dunbar plant has around [REDACTED] years of permitted limestone reserves, the second highest behind the Tunstead plant in terms of permitted limestone reserves.
 - (d) The Tunstead plant currently has just over [REDACTED] of permitted limestone reserves which, based on its current consumption of limestone and slurry, give rise to, by far, the highest permitted reserves among Lafarge Tarmac's four cement plants.

³ Lafarge Tarmac response to the provisional decision on remedies, footnote 21 of paragraph 65(e) (11 November 2013).

Hanson

8. Table 2 shows the top five raw materials consumed (by tonnage) by each of Hanson's three cement plants during FY12.

TABLE 2 Hanson: availability and procurement of raw materials (top 5 by consumption in FY12)

Raw material	Internal or external supply	Name of supplier	FY12 consumption (kt)	Current/ permitted availability*	Future availability†	Use of raw material	Implication of divestiture	Availability of cost-effective alternative
Ketton plant								
Limestone	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Clay	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Limestone (MAC)‡	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Gypsum	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]¶
Gypsum (recycled)	[X]	[X]	[X]	[X]§	[X]	[X]	[X]	[X]
Padeswood plant								
Limestone	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
PFA	[X]	[X]	[X]	[X]§	[X]	[X]	[X]	[X]#
Sand	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Gypsum	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]¶
Limestone (MAC‡)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Ribblesdale plant								
Limestone	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Limestone (MAC)‡	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
PFA	[X]	[X]	[X]	[X]§	[X]	[X]	[X]	[X]#
Gypsum	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]¶
Sandstone	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: Hanson.

*Current permitted availability, where it is expressed in years, is based on current rates of production and/or existing suppliers.

†Future availability based on ability to increase raw material availability, eg through planning permissions.

‡Minor additional constituent.

§[X]

¶The availability of imports is not known.

#[X]

Note: N/A = not applicable.

9. Table 2 above shows that limestone is the key raw material with the highest consumption in terms of tonnage for each of Hanson's plants. Limestone is internally supplied to each cement plant by different quarries.
10. In relation to permitted reserves of limestone:
- The Ketton plant currently has [X] years of permitted reserves, which could be extended by a further [X] years through planning permission.
 - The Padeswood plant has [X] years of permitted reserves, which could be extended by a further [X] years.
 - The Ribblesdale plant has [X] years of permitted reserves, which could be extended by a further [X] years.

Cemex

11. Table 3 shows the top five raw materials consumed (by tonnage) by each of Cemex's two cement plants and Tilbury grinding station during FY12.

TABLE 3 **Cemex: availability and procurement of raw materials (top 5 by consumption in FY12)**

Raw material	Internal or external supply	Name of supplier	FY12 consumption (kt)	Current/ permitted availability*	Future availability†	Use of raw material	Implication of divestiture	Availability of cost-effective alternative
Rugby plant								
Chalk (limestone)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Clay	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Wet sand	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
PFA	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Limestone	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
South Ferriby plant								
Chalk (limestone)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Clay	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Wet sand	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Gypsum	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
PFA	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tilbury grinding station								
Clinker	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
PFA	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Gypsum	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Chalk filler	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Limestone	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Cemex.

*Current permitted availability, where it is expressed in years, is based on current rates of production and/or existing suppliers.
 †Future availability based on ability to increase raw material availability, eg through planning permissions.

12. Table 3 above shows that the top two raw materials for both of Cemex’s cement plants (ie excluding the Tilbury grinding station) are [REDACTED], both of which are [REDACTED]. We note that the third key raw material, sand, is externally supplied to both plants. Each plant sources its [REDACTED].
13. In relation to the availability of limestone (chalk) and clay:
 - (a) The Rugby plant sources its limestone (chalk) from [REDACTED], which has [REDACTED] years of permitted reserves which could be extended by a further [REDACTED]. It also sources its clay from its [REDACTED], which has [REDACTED] years of permitted reserves, but [REDACTED].
 - (b) The South Ferriby plant sources both its limestone (chalk) and clay from [REDACTED], which has permitted reserves of [REDACTED] and [REDACTED] years respectively, but [REDACTED].

Production efficiencies

Introduction

1. This supplement to Annex C sets out a comparison of production efficiency (including costs) and kiln reliability for each of the Top 3 cement producers' GB cement plants.

Our assessment of production efficiency

2. We requested, for each of the Top 3 cement producers' cement plants, annual raw material and power costs for the production of clinker, as well as annual power consumption figures (in kWh per clinker tonne) up to the point at which clinker was produced over the period FY10 to FY12.
3. Lafarge Tarmac told us that it was concerned that this would not correctly capture the relevant energy costs incurred throughout the cement production process, since [redacted] per cent of its cement operations' power consumption was used after clinker was manufactured. It also argued that this measure of power consumption would prejudice it in our calculations given its strategy of producing blended cements which reduced power consumption for each tonne of cement produced.
4. In response to Lafarge Tarmac's concern above, our reasons for focusing on clinker production costs were largely based on our need for unit cost data that would be as comparable as possible across all cement plants. As pointed out by Lafarge Tarmac, its strategy of producing blended cement could distort the comparability of its unit costs with those of other producers. Furthermore, we considered Lafarge Tarmac's concern to be relevant if a unit cost figure was calculated based on clinker production costs and cement production volumes. However, we note that our calculation of unit costs was based on clinker production costs and clinker production volumes, and therefore we did not consider that this would prejudice Lafarge Tarmac in our analysis.
5. Based on Tables 1 to 4 below, in relation to power consumption per tonne of clinker produced, we noted that there was a significant discrepancy between the power consumption per tonne of clinker produced submitted by Hanson and those submitted by Lafarge Tarmac and Cemex. Hanson noted that its figures were based on its plants' total power consumption, whilst the figures provided by Lafarge Tarmac and Cemex concerned power consumption relating only to the production of clinker. We have therefore excluded Hanson's figures from this assessment.
6. In relation to power consumption per tonne of clinker produced, for all of Lafarge Tarmac's and Cemex's cement plants, the [redacted] plant was [redacted], with a range of [redacted] to [redacted] kWh per clinker tonne over the period FY10 to FY12. After the [redacted] plant, the [redacted] plant had a range of [redacted] to [redacted] kWh per clinker tonne over the period, whilst the [redacted] plant had a range of [redacted] to [redacted], and the [redacted] plant had a similar range of [redacted] to [redacted]. The [redacted] plant was next with a range of [redacted] to [redacted], followed by the [redacted] plant with a range of [redacted] to [redacted] (see Tables 1 to 4 below). As mentioned above, we have not been able to ascertain the relative positioning of Hanson's plants in this regard. However, if we looked only at Hanson's figures, there was [redacted] variation across Hanson's power consumption figures for its Ketton and Padeswood plants, where the range for the former was [redacted] kWh per clinker tonne, and [redacted] for the latter. In relation to Ribblesdale, its range was from [redacted] to [redacted]. We noted the trends in Hanson's power consumption figures: whilst power consumption per clinker tonne increased relatively steadily year on year for the Ketton plant, it actually decreased [redacted] for the

Padeswood plant (from [REDACTED] to [REDACTED] kWh per clinker tonne). For the Ribblesdale plant, power consumption per clinker tonne dropped in FY11 before increasing in FY12.

7. We also compared each of the Top 3 cement producers' variable costs of clinker production per tonne of clinker produced, in terms of raw material costs and power costs (see Tables 1 to 4 below). Based on these figures, it is unclear whether they were prepared based on a consistent definition, eg between FY10 and FY12, unit raw material costs ranged from £[REDACTED] (Ketton plant) to £[REDACTED] (Rugby plant), whilst unit power costs ranged from £[REDACTED] (Rugby plant) to £[REDACTED] (Padeswood plant). We also note that in relation to its power costs, Cemex told us that in line with its own standard definition, it [REDACTED] relating to 'general services' (eg offices and workshops) (see footnote to Table 4 below). Given the scale of these discrepancies, in particular in relation to Cemex's figures, we have not been able to rely on the comparability of these figures across their different cement plants.
8. However, we considered that we could compare the unit variable costs (comprising raw material and power costs) of the cement plants for each producer:
 - (a) *Lafarge Tarmac*. In FY12, out of Lafarge Tarmac's four cement plants, the Cauldon plant had the lowest unit variable costs at £[REDACTED]. This was followed by the Tunstead plant at £[REDACTED], the Dunbar plant at £[REDACTED], and lastly the Aberthaw plant at £[REDACTED].
 - (b) *Hanson*. In FY12, out of Hanson's three cement plants, the Ketton plant had [REDACTED] unit variable costs at £[REDACTED], [REDACTED] the Ribblesdale plant at £[REDACTED] and then the Padeswood plant at £[REDACTED].
 - (c) *Cemex*. In FY12, out of Cemex's two cement plants, the South Ferriby plant [REDACTED] compared with the Rugby plant at £[REDACTED].
9. We set out below the figures we used for this assessment.
10. Tables 1 and 2 set out our calculations of unit clinker variable costs and power consumption per clinker tonne for each of Lafarge Tarmac's cement plants over the period from FY10 to FY12.

TABLE 1 **Lafarge Tarmac: production efficiency measures (Cauldon plant and Tunstead plant), FY10 to FY12**

	<i>Cauldon plant</i>			<i>Tunstead plant</i>		
	2010	2011	2012	2010	2011	2012
<i>Clinker production variable costs (£'000)</i>						
Raw materials	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Power*	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Unit clinker production variable costs (£/t)</i>						
Raw materials	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Power*	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Power (kWh)/clinker tonne*</i>	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Lafarge Tarmac.

*The power costs and consumption figures relate to the power (as measured in kWh) consumed up to the point that clinker is produced and therefore power consumption relating to grinding and blending activities are not included.

TABLE 2 Lafarge Tarmac: production efficiency measures (Aberthaw plant and Dunbar plant), FY10 to FY12

	Aberthaw plant			Dunbar plant		
	2010	2011	2012	2010	2011	2012
<i>Clinker production variable costs (£'000)</i>						
Raw materials	[X]	[X]	[X]	[X]	[X]	[X]
Power*	[X]	[X]	[X]	[X]	[X]	[X]
<i>Unit clinker production variable costs (£/t)</i>						
Raw materials	[X]	[X]	[X]	[X]	[X]	[X]
Power*	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]
<i>Power (kWh)/clinker tonne*</i>	[X]	[X]	[X]	[X]	[X]	[X]

Source: Lafarge Tarmac

*The power costs and consumption figures relate to the power (as measured in kWh) consumed up to the point that clinker is produced and therefore power consumption relating to grinding and blending activities are not included.

11. Table 3 sets out our calculations of unit clinker variable costs and power consumption per clinker tonne for each of Hanson's cement plants over the period from FY10 to FY12.

TABLE 3 Hanson: production efficiency measures, FY10 to FY12

	Ketton plant			Padeswood plant			Ribblesdale plant		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
<i>Clinker production variable costs (£'000)</i>									
Raw materials	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Power*	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Unit clinker production variable costs (£/t)</i>									
Raw materials	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Power*	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Power (kWh)/clinker tonne*</i>	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: Hanson.

*The power costs and consumption figures relate to the power (as measured in kWh) consumed up to the point that clinker is produced and therefore power consumption relating to grinding and blending activities are not included.

†Hanson noted that this was based on a plant's total power consumption.

12. Table 4 sets out our calculations of unit clinker variable costs and power consumption per clinker tonne for each of Cemex's cement plants over the period from FY10 to FY12.

TABLE 4 **Cemex: production efficiency measures, FY10 to FY12**

	Rugby plant			South Ferriby plant		
	2010	2011	2012	2010	2011	2012
<i>Clinker production variable costs (£'000)</i>						
Raw materials	[x]	[x]	[x]	[x]	[x]	[x]
Power*	[x]	[x]	[x]	[x]	[x]	[x]
<i>Unit clinker production variable costs (£/t)</i>						
Raw materials	[x]	[x]	[x]	[x]	[x]	[x]
Power*	[x]	[x]	[x]	[x]	[x]	[x]
Total	[x]	[x]	[x]	[x]	[x]	[x]
<i>Power (kWh)/clinker tonne*</i>	[x]	[x]	[x]	[x]	[x]	[x]

Source: Cemex.

*The power costs and consumption figures relate to the power (as measured in kWh) consumed up to the point that clinker is produced and therefore power consumption relating to grinding and blending activities are not included. In line with its own standard definition, Cemex told us that it also [x] relating to 'general services' (eg offices and workshops).

†In relation to its raw material costs to produce clinker, Cemex told us that it [x], and for the avoidance of doubt, excluded fixed costs (ie maintenance costs).

Our assessment of kiln reliability

13. We requested, for each of the Top 3 cement producers' cement plants, the number of days a kiln was operated in each year, and the number of breakdown days, over the period FY10 to FY12. We note that when calculating 'downtime', two of the Top 3 cement producers, namely Hanson and Cemex, included outage days due to planned maintenance works as part of its definition of a 'breakdown', and therefore we would note the limited comparability between their figures and those of Lafarge Tarmac.
14. Based on Tables 5 to 8 below, we consider the kiln reliability for each of the Top 3 cement producers' cement plants:
 - (a) *Lafarge Tarmac*. In terms of the number of days in a year that a plant was operated, both the Cauldon and Tunstead plants consistently achieved the highest figures over the period from FY10 to FY12, compared with those of the Aberthaw and Dunbar plants. For example, operating days at the Cauldon and Tunstead plants did not fall below [x] and [x] days in a year respectively. However, operating days ranged from [x] to [x] days at the Aberthaw plant, and from [x] to [x] days at the Dunbar plant. The Cauldon plant also benefited from one of the lowest downtime percentages at [x] per cent (similar to [x] per cent at the Aberthaw plant), compared with [x] per cent and [x] per cent for the Tunstead and Dunbar plants respectively.
 - (b) *Hanson*. In terms of the number of days in a year that a plant was operated, the Ketton plant achieved the highest figures over the period from FY10 to FY12, with operating days ranging from [x] to [x] days. The Ribblesdale plant operated between [x] and [x] days over the same period, whilst the South Ferriby plant was operated [x],[x] days in FY11 and [x] days in FY12.
 - (c) *Cemex*. In terms of the number of days in a year that a plant was operated, the Rugby plant was operated between [x] and [x] days, whilst for the South Ferriby plant this ranged from [x] to [x] days.
15. We note that both Hanson and Cemex included outages relating to planned maintenance into their calculation of 'breakdown' days, and therefore their downtime percentages in Tables 7 and 8 below respectively do not reveal the underlying reliability of their respective kilns.

16. The figures used in our assessment above are set out below in Tables 5 to 8.
17. Tables 5 and 6 set out our analysis of the operating days and breakdown days for each of Lafarge Tarmac's cement plants.

TABLE 5 Lafarge Tarmac: kiln operating and breakdown days (Cauldon plant and Tunstead plant)

	Cauldon plant			Tunstead plant		
	2010	2011	2012	2010	2011	2012
<i>Operating days</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
<i>Breakdown days</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
<i>Downtime (% of total)*</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
<i>Operating days a year (%)†</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]

Source: Lafarge Tarmac.

*We calculated a kiln's downtime by taking the number of its breakdown days as a percentage of the sum of its breakdown and operating days.

†We calculated a kiln's operating days a year by taking the number of operating days as a percentage of a 365-day year.

TABLE 6 Lafarge Tarmac: kiln operating and breakdown days (Aberthaw plant and Dunbar plant)

	Aberthaw plant			Dunbar plant		
	2010	2011	2012	2010	2011	2012
<i>Operating days</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
<i>Breakdown days</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
<i>Downtime (% of total)*</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
<i>Operating days a year (%)†</i>						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]

Source: Lafarge Tarmac

*We calculated a kiln's downtime by taking the number of its breakdown days as a percentage of the sum of its breakdown and operating days.

†We calculated a kiln's operating days a year by taking the number of operating days as a percentage of a 365-day year.

Note: N/A = not applicable.

18. Table 7 sets out our analysis of the operating days and breakdown days for each of Hanson's cement plants.

TABLE 7 Hanson: kiln operating and breakdown days

	Ketton plant*			Padeswood plant			Ribblesdale plant		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
Operating days†									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Breakdown days‡									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Downtime (% of total)§									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Operating days a year (%)¶									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: Hanson

*Kiln 2 (as labelled by us) at the Ketton plant was mothballed for the whole year during the period under consideration, ie FY10 to FY12 (both years inclusive).

†Hanson calculated its operating days by taking the hours operated in each year and dividing it by 24 hours.

‡Hanson calculated its breakdown days based on 365 days less operating days, ie breakdown days also include downtime for routine maintenance and production planning.

§We calculated a kiln's downtime by taking the number of its breakdown days as a percentage of the sum of its breakdown and operating days.

¶We calculated a kiln's operating days a year by taking the number of operating days as a percentage of a 365-day year.

Notes:

1. N/A = not applicable.

2. Where cells are shaded in grey, these show when the kiln was mothballed for the whole year.

19. Table 8 sets out our analysis of the operating days and breakdown days for each of Cemex's cement plants.

TABLE 8 Cemex: kiln operating and breakdown days

	Rugby plant			South Ferriby plant*		
	2010	2011	2012	2010	2011	2012
Operating days						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
Breakdown days†						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
Downtime (% of total)‡						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]
Operating days a year (%)§						
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]

Source: Cemex

*At the South Ferriby plant, Kiln 1 (as labelled by us) [X].

†[X]

‡We calculated a kiln's downtime by taking the number of its breakdown days as a percentage of the sum of its breakdown and operating days.

§We calculated a kiln's operating days a year by taking the number of operating days as a percentage of a 365-day year.

Notes:

1. N/A = not applicable.

2. Where cells are shaded in grey, these show when the kiln was mothballed for the whole year. Where cells are shaded in blue, these show when the kiln was mothballed for only part of the year.

Capacity utilization based on ETS benchmark allocations

Introduction

1. This supplement to Annex C sets out our assessment estimating the total amount of cement that each cement plant might be able to produce within its benchmark allocation of ETS carbon allowances. Since all cement producers operating under the ETS currently receive 100 per cent of their benchmark allocations free, a cement plant that has an insufficient benchmark allocation would need to purchase additional carbon allowances.

Our assessment

2. Our analysis involved calculating how much cement could be produced by each GB cement plant based on the amount of carbon emissions it was permitted to produce each year based on its free benchmark allocation of carbon allowances, and then calculate the amount of cement production that would be associated with these levels of carbon emissions based on its emissions factor (ie the amount of carbon emissions per tonne of clinker produced), whereby a more carbon-efficient cement plant would be capable of producing more clinker and cement for each carbon allowance. In addition, this could also give rise to a higher surplus of carbon allowances than required, which could either be sold on to the secondary carbon market and provide an additional source of income for the cement producer, or rolled over into the following year.
3. This analysis may be more relevant for a new entrant with a single cement plant, in particular if it does not operate any other installations covered by the ETS: given the freely tradable nature of carbon allowances, this gives an operator that owns multiple installations covered by the ETS greater flexibility in choosing how and where to allocate its total allocation of carbon allowances. The availability of carbon allowances from other ETS installations could be diverted to the production of cement over and above a level permitted by a cement plant's own benchmark allocation. A new entrant that owns a single cement plant would noticeably not have this flexibility.
4. We first estimated each cement plant's emissions factor based on its verified emissions over the period FY10 to FY12, and clinker production volumes. This is set out in Table 1.

TABLE 1 Estimating a cement plant's emissions factor

Lafarge Tarmac (Cauldon & Tunstead plants)	Cauldon plant			Tunstead plant					
	2010	2011	2012	2010	2011	2012			
Verified emissions (kt)									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]			
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]			
Total	[X]	[X]	[X]	[X]	[X]	[X]			
Clinker produced (kt)	[X]	[X]	[X]	[X]	[X]	[X]			
Emissions factor* 3-year average†	[X]	[X]	[X]	[X]	[X]	[X]			
Lafarge Tarmac (Aberthaw & Dunbar plants)	Aberthaw plant			Dunbar plant					
	2010	2011	2012	2010	2011	2012			
Verified emissions (kt)									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]			
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]			
Total	[X]	[X]	[X]	[X]	[X]	[X]			
Clinker produced (kt)	[X]	[X]	[X]	[X]	[X]	[X]			
Emissions factor* 3-year average†	[X]	[X]	[X]	[X]	[X]	[X]			
Hanson	Ketton plant			Padeswood plant			Ribblesdale plant		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
Verified emissions (kt)									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Clinker produced (kt)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Emissions factor* 3-year average†	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Cemex	Rugby plant			South Ferriby plant‡					
	2010	2011	2012	2010	2011	2012			
Verified emissions (kt)									
Kiln 1	[X]	[X]	[X]	[X]	[X]	[X]			
Kiln 2	[X]	[X]	[X]	[X]	[X]	[X]			
Total	[X]	[X]	[X]	[X]	[X]	[X]			
Clinker produced (kt)	[X]	[X]	[X]	[X]	[X]	[X]			
Emissions factor* 3-year average†	[X]	[X]	[X]	[X]	[X]	[X]			

Source: Lafarge Tarmac, Hanson and Cemex

*The emissions factor is calculated by dividing verified emissions by clinker production and represents the amount of carbon emissions that are produced from producing one tonne of clinker.

†We took a three-year average for the emissions factor, but the latest emissions factor may be more indicative of the emissions factor that could be expected going forwards.

‡Since verified emissions data is required only at an installation level rather than by kiln, Cemex had attempted to apportion the South Ferriby plant's total verified emissions to each of its two kilns in FY12 (based on each kiln's clinker production), [X].

Note: Where cells are shaded in grey, these show when the kiln was mothballed for the whole year. Where cells are shaded in blue, these show when the kiln was mothballed for only part of the year.

- In Table 2, we illustrate the number of free carbon allowances granted to each cement plant based on its preliminary benchmark allocation,¹ where each carbon allowance permits the holder to emit 1 tonne of carbon emissions. Using our estimates of the average emissions factor for each cement plant in Table 1 above, we calculated how much clinker production (in tonnes) would be permitted if only these free carbon allowances were used to determine production decisions. We also set out the clinker capacity of each plant based on: (a) its active kilns only (labelled 'active clinker capa-

¹ 'Modified UK National Implementation Measures for Phase III of the EU Emissions Trading System', April 2012. This document contains 'preliminary' benchmark allocations of carbon allowances for UK installations for each year during ETS Phase III (ie from the beginning of 2013 to the end of 2020).

city' in Table 2 below); and (b) both its active and mothballed kilns (if any) (labelled 'total clinker capacity' in Table 2 below).

TABLE 2 ETS Phase III: clinker production from benchmark allocation of carbon allowances

	Emissions factor* (3-yr average)	Benchmark allocation ('000)†	Clinker production from benchmark (kt)‡	3-yr max active clinker capacity (kt)§	3-yr max total clinker capacity (kt)§
<i>Lafarge Tarmac</i>					
Aberthaw plant	[X]	[X]	[X]	[X]	[X]
Cauldon plant	[X]	[X]	[X]	[X]	[X]
Dunbar plant	[X]	[X]	[X]	[X]	[X]
Tunstead plant	[X]	[X]	[X]	[X]	[X]
<i>Hanson</i>					
Ketton plant	[X]	[X]	[X]	[X]	[X]
Padeswood plant	[X]	[X]	[X]	[X]	[X]
Ribblesdale plant	[X]	[X]	[X]	[X]	[X]
<i>Cemex</i>					
Rugby plant	[X]	[X]	[X]	[X]	[X]
South Ferriby plant	[X]	[X]	[X]	[X]	[X]

Source: Lafarge Tarmac, Hanson and Cemex. Preliminary benchmark allocations based on the document 'Modified UK National Implementation Measures for Phase III of the EU Emissions Trading System', April 2012.

*The emissions factor is calculated by dividing verified emissions by clinker production and represents the amount of carbon emissions that are produced from producing 1 tonne of clinker.

†The benchmark allocation represents the amount of free carbon allowances received by each cement plant (or ETS installation) under ETS Phase III. Each carbon allowance permits the holder to emit 1 tonne of carbon (or carbon equivalent) emissions. The figures presented in this table were based on preliminary figures set out in the document 'Modified UK National Implementation Measures for Phase III of the EU Emissions Trading System', April 2012. On 5 September 2013, the European Commission announced that it had completed its process to check and confirm the free allocation of carbon allowances in each member state's National Implementation Measures. This included the cross-sectoral correction factor that was required to ensure that free allocation across the EU remains within the cap set in the ETS Directive. The factor will reduce the preliminary allocation for each ETS installation by 5.73 per cent in 2013, rising to 17.56 per cent in 2020 (average reduction of allocation of 11.58 per cent over the period 2013 to 2020).

‡The 'clinker production from benchmark' column represents the amount of clinker that could be produced if only the benchmark allocation of carbon allowances were surrendered. After surrendering all of its benchmark allocation, ie emitting carbon emissions up to the maximum permitted by these free carbon allowances, an ETS installation must source additional carbon allowances to produce beyond this level.

§We adopted the maximum clinker production capacity achieved over the period FY10 to FY12 by a kiln. This was because the maximum clinker capacity can vary from year to year depending on the assumptions used, eg Hanson's 'Reliability Coefficient'. The difference between active and total clinker production capacity is that the former includes only active kilns whilst the latter includes the reactivation of the mothballed kilns at the Ketton and the South Ferriby plants.

6. In Table 3, we show the percentage of clinker capacity that would be utilized if only a cement plant's free allocation of carbon allowances were used to produce clinker and cement. Table 3 shows that only the Ketton, Padeswood and [X]. We also note that our analysis was based on a preliminary benchmark allocation of free carbon allowances, which was subsequently revised downwards (see footnote † to Table 2 above). This would suggest that should a cement plant operate at full clinker production capacity, then it might be required to purchase additional carbon allowances over and above its benchmark allocation. However, we note that grinding capacity is not taken into account in this analysis, and that if we took grinding capacity into account, it may not be possible for a cement plant to produce at 100 per cent clinker capacity (eg grinding capacity can act as a bottleneck to achieving full clinker capacity).

TABLE 3 Clinker capacity utilization based on production from surrendering only benchmark allocations

	<i>per cent</i>	
	<i>Benchmark active capacity utilization*</i>	<i>Benchmark total capacity utilization*</i>
<i>Lafarge Tarmac</i>		
Aberthaw plant	[X]	[X]
Cauldon plant	[X]	[X]
Dunbar plant	[X]	[X]
Tunstead plant	[X]	[X]
	[X]	[X]
<i>Hanson</i>		
Ketton plant	[X]	[X]
Padeswood plant	[X]	[X]
Ribblesdale plant	[X]	[X]
	[X]	[X]
<i>Cemex</i>		
Rugby plant	[X]	[X]
South Ferriby plant	[X]	[X]
	[X]	[X]

Source: Lafarge Tarmac, Hanson and Cemex.

*The difference between active and total clinker production capacity is that the former includes only active kilns whilst the latter includes the reactivation of the mothballed kilns at the Ketton and South Ferriby plants.

Note: Cells shaded in grey show where production based on surrendering the benchmark carbon allowances exceeds current clinker capacity, ie a surplus of carbon allowances arises even when operating at the plant's theoretical maximum capacity.

7. In Appendix 2.2, we show the carbon price forecasts to the end of ETS Phase III. Given the relatively depressed forecast price of carbon allowances for the remainder of ETS Phase III, ie until 31 December 2020, the consequences of an insufficient benchmark allocation may not be as significant in absolute terms. However, if a benchmark allocation was insufficient, that cement plant would still incur additional costs which its competitors would not be facing.

Historic financial performance

Introduction

1. This supplement to Annex C sets out the historic profit and loss accounts for each of the Top 3 cement producers' cement plants in GB from FY07 to FY12.
2. We note, however, that none of the cement plants we looked at had been operated as a stand-alone plant, and that whilst shared overhead costs have been allocated to each cement plant to reflect a stand-alone site, in practice, the financial effects of being part of a wider network of cement plants cannot be fully eliminated from each cement plant's profit and loss account data, eg we noted that having a network of plants could allow a producer to schedule its production across its different plants.¹
3. Therefore, it would be difficult to assess a cement plant's future stand-alone financial performance based purely on its historic data, in particular given its operation as part of a wider network. Furthermore, given that capacity utilization at each plant can vary between different cement plants within a network, a plant's revenue and profit figures shown below may not be indicative of a plant's potential financial performance if it had been operated on a fully stand-alone basis.
4. Bearing this caveat in mind, we set out the individual profit and loss account data below.

Lafarge Tarmac

5. Table 1 sets out some key financial performance indicators for Lafarge Tarmac's cement plants over the period FY10 to FY12.

¹ Paragraph 7.48.

TABLE 1 Lafarge Tarmac: cement plant key financial performance indicators, FY10 to FY12

	FYE 31 December		
	2010	2011	2012
Aberthaw plant			
Sales volumes (Mt)	[X]	[X]	[X]
Gross revenues (£m)	[X]	[X]	[X]
Net revenues (£m)	[X]	[X]	[X]
Variable profit* (£m)	[X]	[X]	[X]
Site profit† (£m)	[X]	[X]	[X]
EBITDA‡ (£m)	[X]	[X]	[X]
Unit net revenues (£/t)	[X]	[X]	[X]
Unit variable profit (£/t)	[X]	[X]	[X]
Variable profit margin§ (%)	[X]	[X]	[X]
Site profit margin§ (%)	[X]	[X]	[X]
EBITDA margin§ (%)	[X]	[X]	[X]
Cauldon plant			
Sales volumes (Mt)	[X]	[X]	[X]
Gross revenues (£m)	[X]	[X]	[X]
Net revenues (£m)	[X]	[X]	[X]
Variable profit* (£m)	[X]	[X]	[X]
Site profit† (£m)	[X]	[X]	[X]
EBITDA‡ (£m)	[X]	[X]	[X]
Unit net revenues (£/t)	[X]	[X]	[X]
Unit variable profit (£/t)	[X]	[X]	[X]
Variable profit margin§ (%)	[X]	[X]	[X]
Site profit margin§ (%)	[X]	[X]	[X]
EBITDA margin§ (%)	[X]	[X]	[X]
Dunbar plant			
Sales volumes (Mt)	[X]	[X]	[X]
Gross revenues (£m)	[X]	[X]	[X]
Net revenues (£m)	[X]	[X]	[X]
Variable profit* (£m)	[X]	[X]	[X]
Site profit† (£m)	[X]	[X]	[X]
EBITDA‡ (£m)	[X]	[X]	[X]
Unit net revenues (£/t)	[X]	[X]	[X]
Unit variable profit (£/t)	[X]	[X]	[X]
Variable profit margin§ (%)	[X]	[X]	[X]
Site profit margin§ (%)	[X]	[X]	[X]
EBITDA margin§ (%)	[X]	[X]	[X]
Tunstead plant			
Sales volumes (Mt)	[X]	[X]	[X]
Gross revenues (£m)	[X]	[X]	[X]
Net revenues (£m)	[X]	[X]	[X]
Variable profit* (£m)	[X]	[X]	[X]
Site profit† (£m)	[X]	[X]	[X]
EBITDA‡ (£m)	[X]	[X]	[X]
Unit net revenues (£/t)	[X]	[X]	[X]
Unit variable profit (£/t)	[X]	[X]	[X]
Variable profit margin§ (%)	[X]	[X]	[X]
Site profit margin§ (%)	[X]	[X]	[X]
EBITDA margin§ (%)	[X]	[X]	[X]

Source: Lafarge Tarmac.

*Variable profit is calculated after the deduction of variable costs from net revenues, where variable costs largely comprise raw material and power costs.

†Site profit is calculated after the deducting of plant-level fixed costs from variable profit.

‡EBITDA is calculated by deducting divisional level fixed costs (associated with the national cement operations) from site profit, but not deducting central and head office costs, eg including those associated with the ultimate parent company.

§Percentage margins are calculated by dividing the relevant profit measure by net revenues.

¶Lafarge Tarmac did not allocate any divisional fixed costs and therefore its site profit is the same as its EBITDA.

Hanson

6. Table 2 sets out some key financial performance indicators for Hanson's cement plants over the period FY10 to FY12.

TABLE 2 **Hanson: cement plant key financial performance indicators, FY10 to FY12**

	<i>FYE 31 December</i>		
	2010	2011	2012
Ketton plant			
Sales volumes (Mt)	[X]	[X]	[X]
Gross revenues (£m)	[X]	[X]	[X]
Net revenues (£m)	[X]	[X]	[X]
Variable profit* (£m)	[X]	[X]	[X]
Site profit† (£m)	[X]	[X]	[X]
EBITDA‡ (£m)	[X]	[X]	[X]
Unit net revenues (£/t)	[X]	[X]	[X]
Unit variable profit (£/t)	[X]	[X]	[X]
Variable profit margin§ (%)	[X]	[X]	[X]
Site profit margin§ (%)	[X]	[X]	[X]
EBITDA margin§ (%)	[X]	[X]	[X]
Padeswood plant			
Sales volumes (Mt)	[X]	[X]	[X]
Gross revenues (£m)	[X]	[X]	[X]
Net revenues (£m)	[X]	[X]	[X]
Variable profit* (£m)	[X]	[X]	[X]
Site profit† (£m)	[X]	[X]	[X]
EBITDA‡ (£m)	[X]	[X]	[X]
Unit net revenues (£/t)	[X]	[X]	[X]
Unit variable profit (£/t)	[X]	[X]	[X]
Variable profit margin§ (%)	[X]	[X]	[X]
Site profit margin§ (%)	[X]	[X]	[X]
EBITDA margin§ (%)	[X]	[X]	[X]
Ribblesdale plant			
Sales volumes (Mt)	[X]	[X]	[X]
Gross revenues (£m)	[X]	[X]	[X]
Net revenues (£m)	[X]	[X]	[X]
Variable profit* (£m)	[X]	[X]	[X]
Site profit† (£m)	[X]	[X]	[X]
EBITDA‡ (£m)	[X]	[X]	[X]
Unit net revenues (£/t)	[X]	[X]	[X]
Unit variable profit (£/t)	[X]	[X]	[X]
Variable profit margin§ (%)	[X]	[X]	[X]
Site profit margin§ (%)	[X]	[X]	[X]
EBITDA margin§ (%)	[X]	[X]	[X]

Source: Hanson.

*Variable profit is calculated after the deduction of variable costs from net revenues, where variable costs largely comprise raw material and power costs.

†Site profit is calculated after the deducting of plant-level fixed costs from variable profit.

‡EBITDA is calculated by deducting divisional level fixed costs (associated with the national cement operations) from site profit, but not deducting central and head office costs, eg including those associated with the ultimate parent company.

§Percentage margins are calculated by dividing the relevant profit measure by net revenues.

Cemex

7. Table 3 sets out some key financial performance indicators for Cemex's cement plants over the period FY10 to FY12.

TABLE 3 **Cemex: cement plant key financial performance indicators, FY10 to FY12**

	<i>FYE 31 December</i>		
	2010	2011	2012
Rugby plant			
Sales volumes (Mt)	[X]	[X]	[X]
Gross revenues (£m)	[X]	[X]	[X]
Net revenues (£m)	[X]	[X]	[X]
Variable profit* (£m)	[X]	[X]	[X]
Site profit† (£m)	[X]	[X]	[X]
EBITDA‡ (£m)	[X]	[X]	[X]
Unit net revenues (£/t)	[X]	[X]	[X]
Unit variable profit (£/t)	[X]	[X]	[X]
Variable profit margin§ (%)	[X]	[X]	[X]
Site profit margin§ (%)	[X]	[X]	[X]
EBITDA margin§ (%)	[X]	[X]	[X]
South Ferriby			
Sales volumes (Mt)	[X]	[X]	[X]
Gross revenues (£m)	[X]	[X]	[X]
Net revenues (£m)	[X]	[X]	[X]
Variable profit* (£m)	[X]	[X]	[X]
Site profit† (£m)	[X]	[X]	[X]
EBITDA‡ (£m)	[X]	[X]	[X]
Unit net revenues (£/t)	[X]	[X]	[X]
Unit variable profit (£/t)	[X]	[X]	[X]
Variable profit margin§ (%)	[X]	[X]	[X]
Site profit margin§ (%)	[X]	[X]	[X]
EBITDA margin§ (%)	[X]	[X]	[X]

Source: Cemex.

*Variable profit is calculated after the deduction of variable costs from net revenues, where variable costs largely comprise raw material and power costs.

†Site profit is calculated after the deducting of plant-level fixed costs from variable profit.

‡EBITDA is calculated by deducting divisional level fixed costs (associated with the national cement operations) from site profit, but not deducting central and head office costs, eg including those associated with the ultimate parent company.

§Percentage margins are calculated by dividing the relevant profit measure by net revenues.

Assessment of cement plants for possible divestiture

Introduction

1. This annex sets out the details of our assessment of which cement plant (or plants) might form the basis for an effective divestiture remedy. Before we do so, we first set out the views of parties.

Views of parties in the provisional decision on remedies

2. A number of parties told us which cement plants they considered would be suitable candidates for divestiture:
 - (a) MI told us that a divestiture of centrally located plants, such as [REDACTED], would be more beneficial as it would result in a central market with multiple competitors and would not result in the creation of 'local markets'.²
 - (b) When CRH told us that it would be more interested in a modern plant situated in a good location, [REDACTED] would be of likely interest.³
 - (c) Aggregate Industries [REDACTED].⁴
 - (d) [REDACTED], Breedon Aggregates [REDACTED].⁵
3. [REDACTED]⁶
4. Brett Group told us that it would be concerned if Lafarge Tarmac was the prime divestiture candidate [REDACTED] current supply arrangements with Lafarge Tarmac. It added that requiring Lafarge Tarmac to divest cement production capacity could mean that it would be more interested in supplying its own RMX business and less interested in supplying companies like Brett Group. It would also be concerned if the implementation of a cement plant divestiture remedy resulted in three or four 'barely interested' cement producers. This, it added, would [REDACTED].⁷
5. Brett Group told us that it was not familiar with the location, dynamics, reserves or cost bases of the different GB cement plants, and was therefore unable to assess which would be the most attractive divestment.⁸

Our assessment on selecting cement plants for possible divestiture

6. The details of our assessment of which cement plant (or plants) might form the basis for an effective divestiture remedy are set out below. We consider each of the Top 3 cement producers in turn. In determining which cement plants could provide a suitable basis for a divestiture remedy, we have taken into account the relevant design criteria relating to the individual cement plant, as well as the impact on the divesting

² MI and HCM response hearing summary, paragraphs 19 & 21.

³ CRH response hearing summary, paragraph 11.

⁴ Aggregate Industries response hearing summary, paragraph 13.

⁵ Breedon Aggregates response hearing summary, paragraph 9.

⁶ [REDACTED].

⁷ Brett Group response hearing summary, paragraph 12.

⁸ ibid, paragraph 9.

party, in particular its ability to continue to operate as an effective participant in the GB cement markets. This is an important consideration, given that a key objective for this remedy is to increase the number of effective competitors in the GB cement markets, which would be undermined if an individual Top 3 cement producer were unable to compete effectively post-divestiture.

Assessment of Cemex's cement plants

7. Cemex told us that it was [REDACTED],⁹ and therefore a cement plant divestiture would have a greater impact on its business, and would be counter-productive as it would make Cemex a less effective competitor.¹⁰ It also pointed out that whilst it only owned two plants, Lafarge Tarmac had four and Hanson had three plants.¹¹ It also told us that given Cemex's [REDACTED], there was the real possibility that its [REDACTED] if there was a forced divestiture. This, it told us, would unnecessarily [REDACTED] placed on Cemex and restrict its ability to compete effectively in the market.¹²
8. In relation to each of its plants:
 - (a) Cemex argued that the divestiture of the [REDACTED] plant would not be an effective remedy given its [REDACTED], which would make it very unattractive for a new entrant.¹³ It added that the [REDACTED] plant accounted for around [REDACTED] per cent of its clinker capacity and over [REDACTED] per cent of its cement production, and therefore its divestiture would result in Cemex becoming a much smaller [REDACTED] competitor, [REDACTED].¹⁴ It also argued that the [REDACTED] plant was a [REDACTED], would not allow a competitor to compete efficiently.¹⁵
 - (b) In relation to its [REDACTED] plant, Cemex argued that it would be unattractive to a buyer because of its [REDACTED],¹⁶ and [REDACTED]. It added that since the plant was not rail-linked, it [REDACTED].^{17,18}
9. Based on our assessment of plant characteristics, we did not consider that a divestiture of the South Ferriby plant would be effective for the following reasons:
 - (a) It is the smallest cement plant in GB, with active clinker production capacity of [REDACTED] Mt compared with a GB average of 0.8 Mt. Even if its mothballed kiln was to be reactivated, its clinker production capacity at [REDACTED] Mt would still be below the GB average (see Appendix 13.2, Annex C, Supplement 1).
 - (b) It is the only semi-dry process plant, with Cemex's Rugby plant being the only semi-wet process plant (see Appendix 13.2, Annex C, Supplement 6).
 - (c) Out of the nine cement plants of the Top 3 cement producers, the South Ferriby plant generated one of the [REDACTED] site variable profit margins in FY12, at [REDACTED] per cent. Only Lafarge Tarmac's Dunbar plant and Hanson's Padeswood plant generated [REDACTED] per cent respectively, and compares unfavourably with the far [REDACTED] site variable profit margins generated by the Tunstead ([REDACTED] per cent), Cauldon

⁹ Cemex response hearing summary, paragraph 15.

¹⁰ Cemex response to Remedies Notice, paragraph 5.6.

¹¹ Cemex response hearing summary, paragraph 15.

¹² Cemex response to Remedies Notice, paragraph 3.38.

¹³ ibid, paragraph 2.17.

¹⁴ ibid, paragraph 2.18.

¹⁵ ibid, paragraph 5.8.

¹⁶ ibid, paragraph 2.20.

¹⁷ ibid, paragraph 5.10.

¹⁸ ibid, paragraph 5.10.

([REDACTED] per cent), Ketton ([REDACTED] per cent), Ribblesdale ([REDACTED] per cent) and Aberthaw ([REDACTED] per cent) plants. Its Rugby plant had generated margins of [REDACTED] per cent (see paragraph Appendix 13.2, Annex C, Supplement 8).

10. All of these factors indicate that a purchaser of the South Ferriby plant would be a relatively weak competitor. A divestiture of the Rugby plant would result in Cemex becoming a substantially smaller competitor, with only the South Ferriby plant, which for the same reasons given above would not enable Cemex to compete effectively in the market in the future. The Rugby plant represents a significant proportion of Cemex's current cement operations and is the largest plant in GB with clinker production capacity of [REDACTED] Mt (see Appendix 13.2, Annex C, Supplement 1). We therefore concluded that neither of Cemex's plants would provide a suitable basis for divestiture.

Assessment of Hanson's cement plants

11. Hanson told us that a divestiture of one of its plants would lead to a reduction in its operations and footprint in GB, and result in Hanson [REDACTED] business that would ultimately increase costs for customers and consumers.¹⁹ It also added that a divestiture of its [REDACTED] would reduce its capacity [REDACTED]. It argued, therefore, that a divestiture would be unduly punitive on Hanson and would 'remove from the competitive market an operator having a suitably strong production capacity and status as an effective competitive Major'.²⁰ It also told us that a divestiture of one of its plants could [REDACTED].^{21,22}
12. In Appendix 13.2, Annex C, Supplement 4, Figure 5, we looked at the customer catchment areas for Hanson's cement plants, where in Table 15, we showed that the [REDACTED] per cent customer catchment area was [REDACTED] miles for the Ketton plant, [REDACTED] miles for the Padeswood plant, and [REDACTED] miles for the Ribblesdale plant. Therefore, based on customer catchment areas that accounted for [REDACTED] per cent of each plant's total sales volumes in FY11 (including both external and internal sales), we found that each of Hanson's cement plants sales extended into all regions of GB.
13. We note that a divestiture of either the Padeswood plant or the Ribblesdale plant would result in a reduction of its clinker capacity share from its current [REDACTED] per cent down to either [REDACTED] or [REDACTED] per cent respectively (based on Appendix 13.2, Annex C, Supplement 1), which would result in Hanson moving from being the second largest producer to the third largest producer, just ahead of HCM at [REDACTED] per cent, but just below Cemex at [REDACTED] per cent.
14. In active clinker capacity terms (based on taking the highest capacity figure over the period 2010 to 2012), the Ketton plant has [REDACTED] Mt, the Ribblesdale plant has [REDACTED] Mt and the Padeswood plant has [REDACTED] Mt. In FY12 unit site variable profit terms, its Ketton plant generated £[REDACTED] per tonne ([REDACTED] per cent margin), whilst the Ribblesdale and Padeswood plants generated £[REDACTED] ([REDACTED] per cent margin) and £[REDACTED] per tonne ([REDACTED] per cent margin) respectively. Therefore, [REDACTED], but it also represents the plant with the [REDACTED] out of all nine plants owned by the Top 3 cement producers. [REDACTED], we concluded that a divestiture of the Padeswood plant would not be an effective remedy.
15. With clinker production capacity of [REDACTED] Mt, the Ribblesdale plant is Hanson's second largest cement plant, and accounts for [REDACTED] per cent of its total active clinker produc-

¹⁹ [Hanson response to Remedies Notice](#), paragraph 3.6.

²⁰ *ibid*, paragraph 3.7.

²¹ *ibid*, paragraph 3.9.

²² *ibid*, paragraph 3.6.

tion capacity (of [REDACTED] Mt). In relation to the Ketton plant, we note that this represents Hanson's largest [REDACTED]. The Ketton plant was also the most heavily utilized plant out of its three plants, for example during FY12, clinker capacity utilization was highest at the Ketton plant at [REDACTED] per cent compared with [REDACTED] per cent at its Padeswood plant and [REDACTED] per cent at its Ribblesdale plant. We also note that the Ketton plant has two kilns, [REDACTED]. The Ketton plant accounts for [REDACTED] per cent of Hanson's active clinker capacity, and [REDACTED] (see Appendix 13.2, Annex C, Supplement 1).²³

16. We noted that the Ribblesdale plant and the Ketton plant each represented a substantial proportion of Hanson's GB cement operations, and took the view that a divestiture of either of these two cement plants would be a significantly more onerous remedy in terms of its impact on Hanson's overall competitive capabilities—and hence its ability to compete robustly post-divestiture—than a divestiture by Lafarge Tarmac of a similarly-sized cement plant. This proportionately greater impact on Hanson's GB cement operations can be measured both in terms of: (a) the greater proportion of its total clinker capacity that Hanson would be required to divest than would be the case if the divestiture were to come from Lafarge Tarmac; and (b) the fact that Hanson would retain two cement plants if it were required to divest one, whilst Lafarge Tarmac would retain three cement plants if it were required to make the divestiture. Consequently, a divestiture by Hanson would leave it with a significantly smaller GB cement operation than would be the case for Lafarge Tarmac if it were to divest a cement plant. Given this, we concluded, on balance, that neither the Ribblesdale plant nor the Ketton plant would be a suitable basis for divestiture. We therefore concluded that none of Hanson's GB cement plants would represent a suitable basis for a divestiture remedy.

Assessment of Lafarge Tarmac's cement plants

17. In terms of FY12 unit site variable profits, the Cauldon and Tunstead plants generated £[REDACTED] and £[REDACTED] per tonne respectively, compared with £[REDACTED] for the Aberthaw plant and £[REDACTED] for the Dunbar plant.
18. Based on annual clinker capacity only, we would rule out the Aberthaw plant given that its clinker capacity of [REDACTED] Mt is significantly below the GB average of 0.8 Mt, and the smallest of Lafarge Tarmac's four plants. Another reason for concern about the Aberthaw plant as the basis for a stand-alone divestiture is the fact that it has the [REDACTED] unit variable costs in terms of clinker production, almost [REDACTED] the unit cost achieved by the Cauldon plant, for example in FY12, its unit variable costs were £[REDACTED] compared with £[REDACTED] for the Dunbar and Tunstead plants and £[REDACTED] for the Cauldon plant (see Appendix 13.2, Annex C, Supplement 6).
19. We noted that the Aberthaw and Dunbar plants are not centrally located, and this raises a significant risk that either plant, once divested, develops into a regional producer, rather than one that would have an impact on the GB cement markets on a national basis. In this regard, we would have concerns that the Aberthaw plant is not rail-linked, and that the Dunbar plant, whilst rail-linked, is located in Scotland, and would be limited by its location in terms of its geographic reach and ability to access markets with growing demand (eg London and the South-East). This represents a substantial risk to the effectiveness of a divestiture of either the Aberthaw or Dunbar plant. Consequently, we concluded that neither plant would represent a suitable basis for a divestiture remedy.

²³ We calculated Hanson's total clinker capacity based on the highest capacity figure available for each plant over the period from FY10 to FY12. This is to overcome the fact that Hanson's total clinker capacity calculations are sensitive to certain assumptions that may be peculiar to a particular year, eg a 'Reliability Coefficient'.

20. When examining a possible divestiture of either the Cauldon or the Tunstead plant, we note that each plant consistently achieved the highest number of operating days during the year (see Appendix 13.2, Annex C, Supplement 6), where the Cauldon plant was operated for at least [X] days in a year during the period from FY10 to FY12, and the Tunstead plant was operated for at least [X] days over the same period. This compares with a range of [X] to [X] days for the Aberthaw plant and [X] to [X] days for the Dunbar plant. We considered that for a new single plant operator with only one kiln, this would be a particularly important consideration (see Appendix 13.2, Annex C, paragraph 36). We also note that the Cauldon plant achieved the lowest unit variable costs out of the four cement plants (see Appendix 13.2, Annex C, Supplement 6).
21. As set out in Appendix 13.2, Annex C, paragraphs 20 and 21, geographic reach is a relevant consideration when identifying whether a cement plant represents a suitable divestiture package. One key difference between the Cauldon and Tunstead plants is that the latter has a rail connection. We noted that one possible option to provide the Cauldon plant with a rail connection would permit [X] of cement to be transported by rail, compared with over [X] achieved by the Dunbar and Tunstead plants (see Appendix 13.2, Annex C, Supplement 3).
22. In terms of their respective permitted limestone reserves, we note that the Tunstead plant has [X] permitted and future reserves compared with the Cauldon plant. However, we also note that the limestone quarry used by the Tunstead plant is used by Lafarge Tarmac's lime operations. The shared use of the limestone quarry by Lafarge Tarmac's Tunstead plant and lime operations may also give rise to separation issues during a sales process, in particular in relation to the limestone quarry, and any shared sites and facilities. In relation to the Cauldon plant, based on a recent update from Lafarge Tarmac, we have been satisfied that the Cauldon plant would have sufficient permitted limestone reserves to make it a suitable cement plant to form the basis of a divestiture (see Appendix 13.2, Annex C, Supplement 5).
23. Based on our assessment above, we considered that a divestiture of either the Cauldon or Tunstead plant would form a suitable basis for a cement plant divestiture remedy.

Estimating the number of RMX plants within a divestiture package

Introduction

1. In this annex, we estimate the number of RMX plants that might be divested should they be included within a divestiture package. We provide analysis of this for illustrative purposes only as the precise number of RMX plants will depend on a range of factors, including the characteristics and preferences of the purchaser of the divested cement plant.
2. We based our analysis on the following assumptions:
 - (a) A purchaser is currently not vertically integrated and aims to acquire RMX plants up to the permitted 15 per cent upper limit on its total internal cementitious requirement by downstream operations as a percentage of acquired cement production capacity (the VI ratio).
 - (b) We assumed cement production capacity of the divested cement plant at 1 Mt.
 - (c) We assumed that around 300 kg of cementitious materials are required to produce 1 cubic metre of RMX. Therefore 1 kt of cement is required to produce 3,333 cubic metres of RMX.
 - (d) We have assumed that a small-sized RMX plant produces 25,000 cubic metres of RMX a year; a mid-sized RMX plant produces 50,000 cubic metres; and a large-sized RMX plant produces 75,000 cubic metres. This was loosely based on Appendix 9.1, Table 1, where we set out the Majors' estimates of what constituted a small-, medium- and large-scale entrant into the RMX market.
3. Based on the above assumptions, we estimated the maximum permitted level of internal cement sales for each cement plant, based on a 15 per cent upper limit (with an illustrative sensitivity based on a lower limit of 10 per cent). We then estimated the amount of RMX that could be produced from these internal cement volumes. Taking the different RMX plant size scenarios, we then calculated how many RMX plants might be required to be included in the divestiture package. This analysis is set out in Table 1.

TABLE 1 Estimating the number of RMX plant divestitures based on a VI ratio* of 10 or 15 per cent

	1 Mt cement plant
Cement production capacity (kt)	1,000§
Maximum internal cement sales (kt)	
VI ratio of: 10%	100
VI ratio of: 15%	150
RMX produced from internal cement ('000 m ³)†	
VI ratio of: 10%	333
VI ratio of: 15%	500
RMX plant divestitures for 10% VI ratio‡	
Large plant (annual: 75,000m ³)	4
Medium plant (annual: 50,000m ³)	7
Small plant (annual: 25,000m ³)	13
RMX plant divestitures for 15% VI ratio‡	
Large plant (annual: 75,000m ³)	7
Medium plant (annual: 50,000m ³)	10
Small plant (annual: 25,000m ³)	20

Source: CC analysis.

*The VI ratio is calculated the percentage of a purchaser's total cement production accounted for by its own internal cementitious requirement, ie by its own downstream operations that require cement as an input into their production activities.

†Based on a rule of thumb whereby 1 kt of cement is needed to make 3,333m³ of RMX.

‡What constitutes a small, medium and large RMX plant was based loosely on Appendix 9.1, Table 1.

§Figures are used for illustrative purposes only.

- Based on our estimates in Table 1 above, given the similarity in the cement production capacity of the Cauldon and Tunstead plants, the results of our estimates would broadly apply to each of the Cauldon and Tunstead plants. We assumed for simplicity that both plants have total cement production capacity of exactly 1,000 kt or 1 Mt. Based on the assumptions in paragraph 2(d) above, we estimated that either seven 'large-scale' or 20 'small-scale' RMX plants might need to be divested, if a purchaser of either the Cauldon or the Tunstead plant were to acquire RMX plants up to its permitted upper limit (ie internal cementitious requirement of up to 15 per cent of acquired cement production capacity). To put these figures into context, we note that as at 30 June 2013, Lafarge Tarmac operated 84 active RMX plants, 11 mothballed plants and seven dormant or closed plants, which brings the total to 102 plants.

Impact of divestiture on market structure

Introduction

1. In this annex, we examine the impact on current capacity and market shares of a single plant divestiture involving either the Cauldon or the Tunstead plant.
2. For the purposes of our analysis, our definition of ‘current capacity’ was the active cement production capacity of all the GB cement producers. We then looked at the impact on current capacity shares of either a divestiture of the Cauldon or the Tunstead plant under different definitions of ‘post-divestiture capacity’, ie the capacity shares resulting from the implementation of a single cement plant divestiture. We considered the following definition scenarios of post-divestiture capacity:
 - (a) *Base scenario*: where we defined ‘post-divestiture capacity’ as active production capacity only.
 - (b) *Mothballed scenario*: where we defined ‘post-divestiture capacity’ as active and mothballed production capacity only.
 - (c) *Permitted (K2) scenario*: where we defined ‘post-divestiture capacity’ as active, mothballed, and the permitted capacity at the Tunstead plant only (ie including the permitted second kiln at the Tunstead plant but excluding the Medway planning permission). Whilst we have taken the Tunstead plant’s planning permission into account here, we have excluded Lafarge Tarmac’s consented development of a new cement plant at Medway, as this is a much longer-term scenario.
3. We then conducted a separate assessment of how market shares, ie shares of GB cement sales (including sales by cement importers), might be affected by a divestiture of either the Cauldon or the Tunstead plant.

Potential impact of divestiture on capacity shares

4. We have been careful not to rely too heavily on any single estimate of production capacity. As we acknowledged, there is no single measure of total capacity to produce cement.¹ We considered that variations in how cement production capacity was defined and measured would not undermine our analysis which does not rely on exact calculations of production capacity shares.
5. In Table 1, we set out the clinker and cement production capacity of each GB cement plant.

¹ Appendix 7.2, paragraph 2.

TABLE 1 GB clinker and cement production capacity

kt

	Active clinker capacity*	Mothballed clinker capacity*	Total clinker capacity*	FY11 active cement capacity†
<i>Lafarge Tarmac</i>				
Aberthaw plant	[X]	[X]	[X]	[X]
Cauldon plant	[X]	[X]	[X]	[X]
Dunbar plant	[X]	[X]	[X]	[X]
Tunstead plant	[X]	[X]	[X]	[X]
<i>Hanson</i>				
Ketton plant	[X]	[X]	[X]	[X]
Padeswood plant	[X]	[X]	[X]	[X]
Ribblesdale plant	[X]	[X]	[X]	[X]
<i>Cemex‡</i>				
Rugby plant	[X]	[X]	[X]	[X]
South Ferriby plant	[X]	[X]	[X]	[X]
<i>HCM</i>				
Hope plant	[X]	[X]	[X]	[X]
GB	[X]	[X]	[X]	[X]

Source: Top 3 cement producers and Appendix 7.2.

*The sum of active and mothballed clinker production capacity equals total clinker production capacity. Since the clinker production capacity figures can vary slightly from year to year, depending on the underlying assumptions used to calculate them, eg Hanson's Reliability Coefficient, we adopted the maximum capacity achieved by the cement plant during the period FY10 to FY12.

†FY11 active cement production capacity figures are based on Appendix 7.2.

‡[X].

Note: N/A = not applicable for 'mothballed clinker capacity' and not available for 'FY11 active cement capacity'.

6. Based on Table 1 above, we show each cement plant's clinker and cement production capacity shares in Table 2 below. We note that clinker and cement production capacity shares are broadly in line with each other for Lafarge Tarmac and HCM. The differences between clinker and cement capacity shares largely affect Hanson's and Cemex's relative shares. However, we did not find this to affect our analysis.

TABLE 2 GB clinker and cement production capacity shares

per cent

	Active clinker capacity share*	Total clinker capacity share*	FY11 active cement capacity share†
<i>Lafarge Tarmac</i>			
Aberthaw plant	[X]	[X]	[X]
Cauldon plant	[X]	[X]	[X]
Dunbar plant	[X]	[X]	[X]
Tunstead plant	[X]	[X]	[X]
<i>Hanson</i>			
Ketton plant	[X]	[X]	[X]
Padeswood plant	[X]	[X]	[X]
Ribblesdale plant	[X]	[X]	[X]
<i>Cemex</i>			
Rugby plant	[X]	[X]	[X]
South Ferriby plant	[X]	[X]	[X]
<i>HCM</i>			
Hope plant	[X]	[X]	[X]
GB	[X]	[X]	[X]

Source: Top 3 cement producers and Appendix 7.2.

*The sum of active and mothballed clinker production capacity equals total clinker production capacity. Since the clinker production capacity figures can vary slightly from year to year, depending on the underlying assumptions used to calculate them,

eg Hanson's Reliability Coefficient, we adopted the maximum capacity achieved by the cement plant during the period FY10 to FY12.

†FY11 active cement production capacity figures are based on Appendix 7.2.

‡Cemex's cement production capacity excludes the grinding capacity of its Tilbury grinding station.

Note: N/A = not applicable.

7. Table 3 shows the impact of a divestiture of either the Cauldon plant or Tunstead plant on clinker capacity shares under the three different scenarios.

TABLE 3 Impact of a divestiture of either the Cauldon or the Tunstead plant on 'post-divestiture' capacity shares

	kt			
	<i>Current Active clinker</i>	<i>Base Active clinker</i>	<i>Mothballed Active plus mothballed</i>	<i>Permitted (K2) Active plus moth- balled plus K2</i>
Divestiture of the Cauldon plant				
Lafarge Tarmac	[✂]	[✂]	[✂]	[✂]
Hanson	[✂]	[✂]	[✂]	[✂]
Cemex	[✂]	[✂]	[✂]	[✂]
HCM	[✂]	[✂]	[✂]	[✂]
New entrant	[✂]	[✂]	[✂]	[✂]
	<i>Current* Active clinker</i>	<i>Base† Active clinker</i>	<i>Mothballed‡ Active plus mothballed</i>	<i>Permitted (K2)§ Active plus moth- balled plus K2</i>
Divestiture of the Tunstead plant After divestiture of Tunstead plant				
Lafarge Tarmac	[✂]	[✂]	[✂]	[✂]
Hanson	[✂]	[✂]	[✂]	[✂]
Cemex	[✂]	[✂]	[✂]	[✂]
HCM	[✂]	[✂]	[✂]	[✂]
New entrant	[✂]	[✂]	[✂]	[✂]

Source: Top 3 cement producers

*Base scenario: where we define 'post-divestiture capacity' as active production capacity only.

†Mothballed scenario: where we defined 'post-divestiture capacity' as active and mothballed production capacity only.

‡Permitted (K2) scenario: where we defined 'post-divestiture capacity' as active, mothballed, and the permitted capacity at the Tunstead plant only (ie excluding the Medway planning permission).

8. We illustrate the above graphically in the following charts.

FIGURE 1

Impact of divestiture on clinker capacity shares

Divestiture of the Cauldon plant

[✂]

Divestiture of the Tunstead plant

[✂]

Source: Top 3 cement producers.

Note: We considered the following 'post-divestiture' capacity scenarios: (a) Base scenario: where we define 'post-divestiture capacity' as active production capacity only; (b) Mothballed scenario: where we defined 'post-divestiture capacity' as active and mothballed production capacity only; and (c) Permitted (K2) scenario: where we defined 'post-divestiture capacity' as active, mothballed, and the permitted capacity at the Tunstead plant only (ie excluding the Medway planning permission).

9. Table 4 shows the impact of a divestiture of either the Cauldon or Tunstead plant on the relative sizes of the coordinating group and the group of non-coordinating GB cement producers based on clinker capacity shares (ie excluding cement importers) under the three different definitions of 'post-divestiture' capacity.

TABLE 4 **Impact of divestiture on relative clinker capacity of the coordinating group and the group of non-coordinating GB cement producers**

	<i>per cent</i>			
	<i>Current</i>	<i>Base*</i>	<i>Mothballed†</i>	<i>Permitted (K2)‡</i>
<i>Cauldon plant divestiture</i>				
Coordinating group	[80–90]	[70–80]	[70–80]	[70–80]
Non-coordinating GB cement producers	[10–20]	[20–30]	[20–30]	[20–30]
<i>Tunstead plant divestiture</i>				
Coordinating group	[80–90]	[70–80]	[70–80]	[70–80]
Non-coordinating GB cement producers	[10–20]	[20–30]	[20–30]	[20–30]

Source: Top 3 cement producers and Appendix 7.2.

*Base scenario: where we define 'post-divestiture capacity' as active production capacity only.

†Mothballed scenario: where we defined 'post-divestiture capacity' as active and mothballed production capacity only.

‡Permitted (K2) scenario: where we defined 'post-divestiture capacity' as active, mothballed, and the permitted capacity at the Tunstead plant only (ie excluding the Medway planning permission).

Potential impact of divestiture on market shares

10. We conducted a separate assessment to look at the potential impact of a divestiture of either the Cauldon or the Tunstead plant on market shares. This was based on MPA data which showed that FY12 GB cement sales volumes were 8.9 Mt in total, of which 7.7 Mt were sales made by the GB cement producers and 1.2 Mt were by importers without a GB cement plant (including Aggregate Industries). With HCM and a new entrant having cement production volumes of around [X] and [X] respectively, and combined with imported cement sales of 1.2 Mt, this gives 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) for suppliers outside the Top 3 cement producers. This compares with a current situation, ie without a new entrant, of [25–35] per cent market share outside the Top 3 cement producers, ie HCM ([X]) and cement importers (1.2 Mt).

Parties' comments on purchaser suitability

1. This annex sets out parties' comments on the suitability of Aggregate Industries as a purchaser of a divested cement plant.
2. In its response to the provisional decision on remedies, Aggregate Industries told us that it considered itself to be a suitable purchaser, in particular in relation to our criterion set out in paragraph 13.112(c) that a suitable purchaser should not create further competition or regulatory concerns by acquiring the divestiture package. It explained that: (a) an acquisition by Aggregate Industries would satisfy the CC's requirement to create a new producer in the GB cement markets, as it did not currently produce any cement in GB, and had only a 'very limited and ad hoc presence in the market for external sales of cement'; (b) the CC had not found Aggregate Industries to have had any part in the coordination in the GB cement markets; and (c) Aggregate Industries had not been found to have infringed Article 101(1) of the TFEU or equivalent prohibitions.²
3. BDS, in its response to the provisional decision on remedies, raised several points concerning the potential implications of Aggregate Industries as a purchaser of a divested cement plant. It told us that:³
 - (a) [REDACTED]
 - (b) If Aggregate Industries acquired the divested cement plant, it would have an impact on the concrete products industry. It told us that unlike Lafarge Tarmac, which did not produce concrete products, Aggregate Industries was a 'major' producer of concrete products.⁴ [REDACTED] BDS later added that since its submission was made, it was announced that Lafarge Tarmac intended to acquire Tarmac Building Products, which manufactured concrete products.
4. In relation to BDS's arguments, we noted that an acquisition of a cement plant by Aggregate Industries may result in it ceasing to import any cement (which amounted to around [REDACTED] kt in FY11, but [REDACTED] over the period FY07 to FY11). Therefore, any existing external customers that currently purchase cement from Aggregate Industries may be required to find alternative supplies. However, we noted that the majority of Aggregate Industries' imported cement was consumed internally by its own downstream operations. For example, in FY11, Aggregate Industries consumed around [REDACTED] Mt of cement, around [REDACTED] per cent of which was used in its downstream concrete products operations, and [REDACTED] per cent in its downstream RMX operations. However, we noted that Aggregate Industries' concrete products operations are substantial, and therefore if Aggregate Industries were to become a potential purchaser, part of our assessment of whether it would be a suitable purchaser would be likely to involve a competitive assessment of the impact of its acquisition of Lafarge Tarmac's cement plant on the concrete products market. We therefore do not rule out Aggregate Industries as a suitable purchaser until we have been able to consider its competitive impact, which will take place if necessary during the implementation phase of this remedy.

² [Aggregate Industries response to the provisional decision on remedies](#), p2 (28 October 2013).

³ [BDS response to the provisional decision on remedies](#) (15 October 2013).

⁴ BDS told us that Aggregate Industries was one of the top three companies producing building blocks, decorative paving, decorative walling, flooring, concrete block paving and kerbs (source: [BDS response to the provisional decision on remedies](#)).

5. 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. In particular, we note that Aggregate Industries' downstream businesses consumed around [redacted] Mt of cement. Therefore, we are 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),⁵ albeit 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.

⁵ 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).

General views on the effectiveness of a cement market data remedy

Introduction

1. This appendix provides the general views of parties that were set out in the provisional decision on remedies in relation to the effectiveness of a remedy to place restrictions on the publication of GB cement market data.

General views

2. In general, most parties considered that there was a benefit to publishing cement market data, eg in relation to planning the reactivation of capacity to meet an upturn in demand; supporting business planning and assisting new entrants to the industry and supply chain; used by public and private entities to assess the UK economy and in particular the construction industry, its market conditions and activity levels; supporting appropriate policy developments; and enabling financial institutions to provide intelligence on UK market conditions and investment opportunities.
3. Cemex told us that the publication of cement and sales production data after a time lag would be a particularly effective remedy to eliminate the alleged coordination.¹ It considered that three months would be an appropriate time lag for publication of any sales data.² Furthermore, it considered that the GB cement producers should be able to supply sales and production volume data to trade associations and other private sector organizations after the expiry of an appropriate time lag of no longer than three months.³
4. Hanson considered that a time lag of three months would be suitable and would reduce the level of market transparency.⁴ However, it noted that there should be a suitable 'exceptions regime' that would allow for the provision of data where required by law or for other justified reasons.⁵ It stated that the CC should ensure that any restriction imposed on the GB cement producers as regards the provision of data to bodies such as the MPA or CEMBUREAU, were not more restrictive than necessary to achieve the general objective of the three-month time lag for the publication of industry statistics.⁶
5. Lafarge Tarmac told us that a package of some, or all, of the remedies in the Remedies Notice that targeted market transparency would comprehensively eliminate any possibility of the GB cement producers establishing or monitoring a common understanding on the terms of coordination.⁷
6. MI (HCM), which had recently joined the MPA, considered that a delay in publication of around three months was acceptable.⁸
7. Aggregate Industries indicated that it did not use the published cement market data and therefore would not be adversely affected if it was not made available.⁹

¹ [Cemex response to Remedies Notice](#), paragraph 4.15.

² [ibid](#), paragraph 6.3.

³ [ibid](#), paragraph 6.7.

⁴ [Hanson response to Remedies Notice](#), paragraph 7.5.1.

⁵ [ibid](#), paragraph 7.5.2.

⁶ [ibid](#), paragraph 7.5.3.

⁷ [Lafarge Tarmac response to provisional findings and Remedies Notice](#), paragraph 233.

⁸ [MI \(HCM\) response hearing summary](#), paragraph 43.

8. In relation to the views of the cement importers:
- CRH considered it unnecessary to prohibit the data completely but told us that publication on a quarterly or semi-annual basis should still enable interested parties to observe trends in the industry.¹⁰
 - Titan told us that whilst it was not a member of the MPA,¹¹ and did not submit any data to it, it did use the data in order to perform a high level analysis of the GB market and to ascertain general consumption levels, although it stated that this was of limited use.¹² It did not express any views in relation to the appropriate time lag for publishing such data.
 - Dragon Alfa (CPV) told us that whilst it used the data for comparing its business performance against the market,¹³ a time lag of three months would not be problematic.¹⁴ It added that it found the published regional data useful.¹⁵
9. Breedon Group told us that it used the MPA data as an indication of what the market was doing both regionally and nationally,¹⁶ and noted that a three-month time lag would not present any problems.¹⁷
10. Brett Group used the published cement market data¹⁸ and considered that it gave Brett Group competitive leverage when combined with other market intelligence.¹⁹ It also considered that a three-month time lag would not be problematic.²⁰
11. We now turn to the views of the parties involved in the collation and publication of this data, namely the MPA, Bessler Hendrie (the firm of chartered accountants involved in the collation of this data on behalf of the MPA), and BIS. We also set out the views from the Office for National Statistics (ONS) which also publishes cement market data, but in a different form from the data published by the MPA and BIS. We set out the details of the ONS data later.
12. The MPA told us that it provided a valuable service in ensuring that its members provided Bessler Hendrie with the requested information on a timely basis and that it had a legitimate role in effectively sense checking the data. It told us that it had doubts about the usability of the data where its collection became the sole responsibility of a government department, referring to the problems experienced in the past by way of support for this position.²¹
13. The MPA explained that previously the Department of Trade and Industry (DTI) had collected the cement market data until 2006 when the British Cement Association (BCA) (now part of the MPA) commissioned Bessler Hendrie to collect the data from the four GB producers on a confidential basis. The MPA told us that from January 2007, the BCA decided to publish the aggregated data one month in arrears rather than three. It told us that the BCA had alerted the OFT to this change in practice and

⁹ [Aggregate Industries response hearing summary](#), paragraph 27.

¹⁰ [CRH response hearing summary](#), paragraph 19.

¹¹ [Titan response hearing summary](#), paragraph 21.

¹² [ibid](#), paragraph 22.

¹³ [Dragon Alfa \(CPV\) response hearing summary](#), paragraph 22.

¹⁴ [ibid](#), paragraph 24.

¹⁵ [ibid](#), paragraph 23.

¹⁶ [Breedon Aggregates response hearing summary](#), paragraph 22.

¹⁷ [ibid](#), paragraph 23.

¹⁸ [Brett Group response hearing summary](#), paragraph 20.

¹⁹ [ibid](#), paragraph 21.

²⁰ [ibid](#), paragraph 22.

²¹ [MPA response hearing summary](#), paragraph 11.

was advised by the OFT in 2007 that it was for the BCA to analyse the effect of its own conduct as to whether it was compliant with competition laws.²²

14. The MPA told us that it did not see why a different remedy should be imposed on a private sector organization such as the MPA as opposed to a government department such as BIS.²³ It told us that a recommendation under this remedy would restrict access to market data except through a government source, and therefore would stifle market analysis and innovation, eg when this data was collected by the DTI, errors were identified in the collected data and there was a view that the collation and publication of this data was less of a priority for a public sector organization such that it was not wholly reliable.²⁴ However, the MPA told us that it was prepared to consider a longer time lag provided it struck a reasonable balance between competition considerations and the legitimate benefits that users derived from the publication of the data.²⁵
15. Bessler Hendrie told us that it had collected this data for the BCA (the precursor to the MPA) since 2006. It explained that the GB cement producers (all MPA members) submitted their data directly to Bessler Hendrie using template spreadsheets. It told us that it aggregated the data before sending the results back to the MPA, its members, CEMBUREAU and BIS. It confirmed that no individualized data was provided to the MPA members or the executive of the MPA. [REDACTED] It added that it was bound by its ethical standards and code and as a firm of chartered accountants was regulated by the Institute of Chartered Accountants in England and Wales and compliance with confidentiality aspects was mandatory.
16. BIS told us that prior to 2007, data on cement sales and production volumes were published three months in arrears and that when Bessler Hendrie commenced collecting it on behalf of the BCA (now the MPA), it moved to collecting and publishing the data one month in arrears.²⁶ BIS indicated that the data provided a very useful guide to predicting construction output,²⁷ and considered that the longer the time lag, the less useful the data would become in this regard.²⁸ In particular, BIS informed us that it was considering developing a forecasting model which used a number of different data points related to the construction industry, including the data it published monthly in relation to the GB cement markets. It added that the reliability and usefulness of its forecasting model would be undermined if it were to use data that was published more than three months in arrears.
17. Finally, we also found that the ONS published cement market data, but in a different form to that published by the MPA and BIS. The ONS told us that it collected monthly price data from the GB cement producers, which was used in calculating its producer price indices. It told us that it surveyed a sample of companies operating in the cement sector but did not publish company-specific data, and only published the data in aggregated index form on a monthly basis. It told us that its producer price indices were used by various different types of institutions and users, eg other divisions within the ONS, HM Treasury, the Bank of England, financial institutions, BIS and other government departments, and academics and researchers.
18. The ONS told us that it also collated data for the PRODCOM Survey (PRODUCTION COMMunautaire, or products of the European Community), for which the ONS esti-

²² Namely, the Competition Act 1998.

²³ [ibid](#), paragraph 1.3.

²⁴ [ibid](#), paragraph 1.4.

²⁵ [ibid](#), paragraph 1.5.

²⁶ [BIS response hearing summary](#), paragraph 8.

²⁷ [ibid](#), paragraph 12.

²⁸ [ibid](#), paragraph 5.

mated the sales of UK manufacturers by product, and then submitted to EUROSTAT (Statistical Office of the European Community). Aggregated PRODCOM data is published for all European countries on the EUROSTAT website, and UK data is published on the ONS website. The ONS told us that its PRODCOM branch collected manufacturers' sales values and volumes from all cement producers in the UK (including Northern Ireland) with more than 20 employees, and estimates for smaller manufacturers' sales from a sample of producers with fewer than 20 employees. It added that this data included cement clinker, Portland cement and other hydraulic cements. It explained that the relevant firms were required to submit their data two months after the year-end, after which the ONS published preliminary figures six months after year-end; intermediate figures 12 months after year-end; and final figures 18 months after year-end.

Supporting materials to price announcement remedy

1. In this appendix, we present the supporting materials to the price announcement remedy.
2. It comprises the following annexes:
 - Annex A: General views on the effectiveness of a price announcement remedy
 - Annex B: Illustrative customer-specific price announcement letter

General views on the effectiveness of a price announcement remedy

Introduction

1. This annex provides the general views of parties that were set out in the provisional decision on remedies in relation to the effectiveness of a remedy concerning price announcement letters.

General views

2. Most parties indicated that there were benefits to the provision of price information to customers, and it was noted by the GB cement producers that price announcement letters were an effective way to communicate with customers and provided a starting point for price negotiations to commence. The OFT submitted that notice of an intended price increase permitted the customer to plan and budget in advance and provided an opportunity for them to switch from, or terminate, the contract with their existing cement producer.
3. We set out below the general views concerning the effectiveness of this remedy from the four GB cement producers, before setting out the views of the other parties.
4. Lafarge Tarmac told us that price announcement letters did not materially influence actual prices and disagreed with our analysis of the role of these letters in facilitating price parallelism and price leadership. It noted that Anglo American and Lafarge had offered similar remedies during the Lafarge Tarmac JV merger inquiry but that these were not accepted by the CC at the time.¹
5. Hanson did not agree that these letters had the ability to facilitate price leadership, price following or softening customer resistance to price increases.² However, it submitted that a prohibition on generalized price announcement letters would appear to address the CC's concerns.³ It considered that any remedy should not prevent individualized proposals from being sent to customers.⁴
6. Cemex told us that a prohibition on generalized price announcement letters would reduce transparency and address a number of the CC's proposed concerns including: price leadership, price following and softening customers to price increases; transparency on competitor's prices; and Lafarge's leadership role in coordination.⁵ It did not consider that it would be beneficial to develop a general template to be used for customer-specific price announcement letters as it would unduly restrict the commercial freedom of the GB cement producers and customers to negotiate in their preferred manner.⁶
7. MI told us that it did not use price announcement letters and preferred to deal with customers face to face.⁷ It noted that it understood the risks around signalling and

¹ [Lafarge Tarmac response to Remedies Notice](#), paragraphs 104–106 & 204.

² [Hanson response to Remedies Notice](#), paragraph 7.9.

³ [ibid](#), Paragraph 7.10.

⁴ [ibid](#), Paragraph 7.11.

⁵ [Cemex response to Remedies Notice](#), paragraph 4.47.

⁶ [ibid](#), paragraph 5.8.

⁷ [MI and HCM response hearing summary](#), paragraph 34.

that a prohibition on generalized price announcement letters would not present any problems for it.⁸

8. Aggregate Industries considered that these letters were a starting point for negotiations and therefore it did not matter whether they were generalized or specific. It also told us that it received price announcement letters at the same time of year that it conducted its business planning and budget modelling, including negotiations with its own customers. It considered these letters to be a more efficient means of communication as opposed to face-to-face contact and it was important that this practice continued in some form.⁹
9. In relation to the views of the mid-tier independent aggregates and RMX producers:
 - Breedon Aggregates told us that a move away from generalized price announcement letters in place of personalized letters would be logical including information about the actual prices paid by the customer which would reduce the likelihood that either the buyer or seller would allow the letter to be circulated more widely.¹⁰ It also told us that letters relating to GGBS should be treated in the same way as cement.¹¹
 - Brett Group told us that it found price announcement letters beneficial especially when dealing with customers that had entered into contracts in excess of 12 months as it was able to use these letters to pass on price increases.¹² However, it did not put much credence in the letters themselves and preferred to negotiate face to face with the cement supplier.¹³ It told us that it would not present any problems if suppliers wrote to it in more personal terms.¹⁴
10. In relation to the views of the cement importers:
 - CRH told us that the proposed remedy would not impact on its business as Premier Cement did not currently send its customers such letters nor did it request them from the GB cement producers.¹⁵
 - Titan understood the rationale for this remedy and was content with it although it pointed out that there would need to be clear rules on what was permissible and what was not as suppliers still had to be able to communicate their pricing policy to their customer.¹⁶
 - Dragon Alfa (CPV) told us that price announcement letters provided an indication of what the GB cement producers wanted to achieve and provided an idea of what it should be doing with its own prices.¹⁷ It had abandoned the practice of sending such letters around two to three years ago and now negotiated directly with its customers. It would therefore not be problematic if the CC imposed a prohibition on these types of letters.¹⁸

⁸ [ibid](#), paragraph 37.

⁹ [Aggregate Industries response hearing summary](#), paragraphs 22, 23 & 25.

¹⁰ [Breedon Aggregates response hearing summary](#), paragraph 19.

¹¹ [ibid](#), paragraph 21.

¹² [Brett Group response hearing summary](#), paragraph 17.

¹³ [ibid](#), paragraph 18.

¹⁴ [ibid](#), paragraph 19.

¹⁵ [CRH response hearing summary](#), paragraph 18.

¹⁶ [Titan response hearing summary](#), paragraph 20.

¹⁷ [Dragon Alfa \(CPV\) response hearing summary](#), paragraph 20.

¹⁸ [ibid](#), paragraph 21.

11. Finally, the OFT submitted that it would expect customers to be told in advance of price changes so that they could budget accordingly and make well-informed decisions on whether to terminate their contracts and switch suppliers. It told us that the CC needed to consider the definition of 'price announcement' and suggested a wide definition that would encompass notifications about changes in either both actual prices and pricing structure. It added that it would prefer to see a prohibition of forms and content of communications rather than a template.

Illustrative customer-specific price announcement letter

To: [Insert contact name, company name and address]

Date:

Re: [Insert customer account number] — notice of price changes effective from [date]

Dear [customer name],

We write to inform you [insert reason for the correspondence and price change where relevant].

We set out below in Table 1 a list of the cementitious products affected by this price change and which you have purchased from us in the last [insert months since last price change]. We note the price at which we supplied these products to you previously and the new price which we propose should take effect from [insert date].

[Where relevant] We also wish to inform you that [insert reason for a change in fuel surcharge].

We also include in Table 1, the old fuel surcharge paid by you and the new surcharge that will be applied by us from [insert date]. You will find at Annex [to be prepared by cementitious product supplier] our methodology and calculations for this change in fuel surcharge.

TABLE 1 Price changes taking effect from [insert date]

Cementitious product name	Old price to customer	New price to customer	Old fuel surcharge to customer	New fuel surcharge to customer

We have also made changes to our other products in our portfolio and can send you a price proposal that is specific to you, your requirements and location upon request.

Supporting analysis to GGBS remedies

1. In this appendix, we present the analysis underlying our consideration of the GGBS remedies.
2. It comprises the following annexes:
 - Annex A: General views on the effectiveness of the GGBS remedies
 - Annex B: The ability of GB cement producers to produce GGBS and incentives to co-grind
 - Annex C: GB map of GGBS plants and depots and GBS plants
 - Annex D: Diagram illustrating how the GBS agreements govern GBS supply
 - Annex E: Supporting analysis of the scope of the GGBS plant divestiture remedy
 - Supplement 1: Production capacity across the GGBS supply chain
 - Supplement 2: Actual production at each stage of the GGBS supply chain
 - Supplement 3: The potential competitive constraint from imported GBS
 - Supplement 4: GGBS plants: distribution capabilities
 - Supplement 5: Financial information: Hanson's GGBS operations
 - Supplement 6: Scunthorpe GGBS plant: divestiture considerations
 - Supplement 7: Analysis of mothballed GGBS plants as a basis for divestiture
 - Annex F: Estimates of the size of the GBS stockpile
 - Annex G: GBS plants: distribution capabilities and financial information
 - Annex H: Background on the UK steel market

General views on the effectiveness of the GGBS remedies

Introduction

1. This annex provides the general views of parties that were set out in the provisional decision on remedies in relation to the effectiveness of the various remedy options concerning the GGBS supply chain.

General views

2. Hanson told us that the exclusivity granted by its GBS agreements was critical for its GGBS operations to ensure they could secure GBS from multiple locations given the lack of stability in steel production, the absence of any guarantee in relation to the supply of BFS, and the consequent [redacted] supply of GBS.¹ It told us that the customer benefited from having access to a product on a national basis and the uncertain future of the steel industry was such that only a single supplier with access to all three steelworks could provide the required supply and availability of GBS should one of the plants no longer be operating.² [redacted] It also argued that the steel producers themselves would not have a strong demand for producing either GBS or GGBS because the current arrangements were driving the supply and demand for GGBS in the market.³
3. By contrast, Lafarge Tarmac told us that a remedy that freed up the GGBS supply chain would drive down GGBS prices, enabling customers to secure access to low-cost and local sources of GGBS, and also help to drive down the price of cement.⁴ It told us that under the GBS agreements, it was prevented from lowering the price of GBS, since the price it received for GBS was linked to Hanson's selling price of GGBS. It believed that an effective remedy would take the form of its full exit from its GBS operations in order to facilitate the creation of new GBS producers that would have the ability to set their own prices and sell GBS to the open market to any customer that could grind GBS into GGBS (including the GB cement producers).
4. In relation to the views on the effectiveness of this remedy from the two GB steel producers that were party to the BFS agreements with Lafarge Tarmac, namely Tata Steel and SSI:
 - (a) Tata Steel believed that the [redacted], and that any 'anti-competitive' issues existed because [redacted].⁵ It told us that the GGBS market was closer to the cement market⁶ and [redacted].⁷
 - (b) SSI told us that [redacted].⁸ It considered that the market for slag products had for some time been 'tightly controlled' by individual firms at various stages of the supply chain through their 'specialization' and 'very long-term' contracts. [redacted]⁹ SSI also told us that for a competitive market, there would need to be several GGBS

¹ [Hanson response hearing summary](#), 2 July 2013, paragraph 44.

² [ibid](#), 23 July 2013, paragraph 25.

³ [ibid](#), 23 July 2013, paragraph 33.

⁴ [Lafarge Tarmac response hearing summary](#), paragraph 12.

⁵ [Tata Steel response hearing summary](#), paragraph 1.

⁶ [ibid](#), paragraph 30.

⁷ [Tata Steel response to Remedies Notice](#), p2, under ii) a).

⁸ [SSI response to Remedies Notice](#), p2, paragraph A.

⁹ [ibid](#), p2.

plant owners, and probably at least as many as the number of owners of GBS plants.¹⁰

5. We set out below the views of the other Majors:
 - (a) Cemex told us that prices were determined through negotiations and therefore it did not know whether increased competition would drive down GGBS prices.¹¹ However, even if increased competition did result in lower GGBS prices, it told us that it would not look to increase the amount of GGBS it purchased.¹²
 - (b) MI told us that the [REDACTED].¹³
 - (c) Aggregate Industries told us that it was not well placed to comment on the effectiveness of this remedy as [REDACTED].¹⁴
6. Breedon Aggregates and Brett Group, both mid-tier independent aggregates and RMX operators, focused on the effectiveness of a GGBS plant divestiture remedy:
 - (a) Breedon Aggregates considered that whilst a GGBS plant could be divested to any of the existing GB cement producers other than Hanson, a divestiture to HCM, as the new entrant in the GB cement markets, might encourage more competition, and a divestiture to a party that was independent of any of the GB cement producers, would likely result in the new entrant competing 'vigorously' against them.¹⁵
 - (b) Brett Group told us that it considered Hanson's 'domestic monopoly' in the supply of GGBS allowed it to sell GGBS at a price that tracked below the price of CEM I cement in order to maintain its GGBS sales volumes.¹⁶ It told us that this 'monopoly' was one of the reasons why it imported GGBS for its internal use,¹⁷ and that it would prefer to deal with a number of competing GGBS suppliers.¹⁸
7. In relation to the views of three GB cement importers, CRH told us that its businesses were not affected by the current arrangements in GB for the production of GBS and GGBS as CRH was not involved with GBS or GGBS production.¹⁹ Titan told us that it was unable to comment on this remedy as it was not involved in this aspect of the market either in GB or in other countries.²⁰ However, Dragon Alfa (CPV) told us that where the supply of both GBS and GGBS were under the control of a limited number of firms, it was unlikely that this situation would be beneficial to the 'overall market', and that 'competition issues' were likely to arise from this.²¹
8. Finally, the OFT told us that there might be scope for Hanson to divest some, or all, of its GGBS plants to independent operators, and that this might serve to increase the 'visibility' of GBS prices upstream, as well as expose GGBS to some, albeit likely limited, competition from GGBS imports.²²

¹⁰ [ibid](#), p2, paragraph C.

¹¹ [Cemex response hearing summary](#), paragraph 36.

¹² [ibid](#), paragraph 35.

¹³ [Mittal/HCM response hearing summary](#), paragraph 47.

¹⁴ [Aggregate Industries response to Remedies Notice](#), paragraph 8.3.

¹⁵ [Breedon Aggregates response hearing summary](#), paragraph 26.

¹⁶ [Brett Group response hearing summary](#), paragraph 26.

¹⁷ [ibid](#), paragraph 24.

¹⁸ [ibid](#), paragraph 26.

¹⁹ [CRH response hearing summary](#), paragraph 21.

²⁰ [Titan response hearing summary](#), paragraph 19.

²¹ [CPV response hearing summary](#), paragraph 26.

²² [OFT response to Remedies Notice](#), paragraph 25.

The ability of GB cement producers to produce GGBS and incentives to co-grind

Introduction

1. This annex first examines the ability of the GB cement producers to grind clinker at their existing cement plants. We treated clinker grinding capability as one possible indication for GBS grinding capacity to produce GGBS, although we note that a clinker grinding mill would require investment to modify it to enable it to grind GBS into GGBS. We then consider the incentives of the GB cement producers to co-grind both GBS and clinker to produce pre-blended cement.

Ability of GB cement producers to produce GGBS

2. We asked the GB cement producers to provide details of their ability to grind GBS into GGBS using their existing clinker grinding mills based on two possible options, either: (a) the use of a clinker grinding mill to grind both GBS and clinker simultaneously, ie co-grinding or inter-grinding; or (b) the dedicated use of a clinker grinding mill to produce GGBS. We also asked each GB cement producer to provide details of their available clinker grinding capacity to understand the scope for any potential GBS grinding capacity within the GB cement producers' existing clinker grinding mills.

Lafarge Tarmac: ability to grind GBS to GGBS

3. Table 1 below shows Lafarge Tarmac's current availability of clinker grinding capacity and its ability to either co-grind or use an existing clinker grinding mill as a dedicated GBS grinding mill, ie similar to a GGBS plant.

TABLE 1 Lafarge Tarmac: ability to grind clinker into cement (figures for FY12 or as at 31 December 2012)

	Aberthaw plant	Cauldon plant	Dunbar plant	Tunstead plant
Number of active grinding mills	[redacted]	[redacted]	[redacted]	[redacted]
Number of mothballed grinding mills	[redacted]	[redacted]	[redacted]	[redacted]
Daily grinding capacity (active) (kt)*	[redacted]	[redacted]	[redacted]	[redacted]
Daily grinding capacity (active/mothballed) (kt)†	[redacted]	[redacted]	[redacted]	[redacted]
Annual grinding capacity (active) (kt)‡	[redacted]	[redacted]	[redacted]	[redacted]
Annual grinding capacity (active/mothballed) (kt)§	[redacted]	[redacted]	[redacted]	[redacted]
Clinker ground during FY12 (kt)¶	[redacted]	[redacted]	[redacted]	[redacted]
Cement ground during FY12 (kt)§	[redacted]	[redacted]	[redacted]	[redacted]
Active grinding capacity utilization (%)#	[redacted]	[redacted]	[redacted]	[redacted]
Current ability to co-grind clinker and GBS?	[redacted]	[redacted]	[redacted]	[redacted]
Current ability to use existing mill as a GGBS plant	[redacted]	[redacted]	[redacted]	[redacted]

Source: Lafarge Tarmac's response to co-grinding questions.

*Grinding capacity per day based on active grinding mills (kt). Lafarge Tarmac calculated this as annual grinding capacity divided by 365 days.

†Grinding capacity per day based on active + mothballed grinding mills (kt). Lafarge Tarmac calculated this as annual grinding capacity divided by 365 days.

‡Grinding capacity per year based on active grinding mills (kt). Lafarge Tarmac's annual grinding capacity was based on average cement output from the mills based on 2012 average cement (tonnes per hour) x [redacted] utilization factor.

§Grinding capacity per year based on active and mothballed grinding mills (kt). Lafarge Tarmac's annual grinding capacity was based on average cement output from the mills based on 2012 average cement (tonnes per hour) x [redacted] utilization factor.

¶Clinker actually ground in active mills during FY12 (kt).

#Active grinding capacity utilized in FY12 (% of grinding capacity per year based on active grinding mills).

§Lafarge Tarmac told us that cement had other constituents besides clinker which were also added to the mills such that grinding capacity utilization should be based on all mill inputs including clinker, gypsum, additives (eg PFA and limestone) and ferrous sulphate as required in the make-up of the cement produced on the mills.

Note: Figures are based on FY12 or as at 31 December 2012.

4. Lafarge Tarmac told us that its clinker grinding mills were not set up for co-grinding, and therefore, as a minimum, investment requirements included storage for inbound GBS, feed system for GBS to the mill and storage for the resulting finished 'slag blend cement'. It added that in relation to the investment required to modify one of its existing clinker grinding mills to enable co-grinding, it estimated that investment of between £[redacted] and £[redacted] million would be required for each clinker grinding mill, and that it would take between [redacted] and [redacted] months to complete. However, given that GBS had a moisture content of around 10 per cent, Lafarge Tarmac told us that this would limit the amount of GBS that could be added to its ball grinding mill to a rate of 10 to 15 per cent due to 'flow issues'. Therefore, in order to increase this beyond 10 to 15 per cent, it would also need to invest in a drying system for the GBS.
5. Based on Lafarge Tarmac's high-level estimate, including the cost of the GBS drying system, the total investment could be between £[redacted] and £[redacted] million which was the level of investment required if it intended to convert a spare clinker grinding mill into a dedicated GGBS plant.

Hanson: ability to grind GBS to GGBS

6. Table 2 below shows Hanson's current availability of clinker grinding capacity and its ability to either co-grind or use an existing clinker grinding mill as a dedicated GBS grinding mill, ie similar to a GGBS plant. We note that Hanson already has GGBS plants for this purpose.

TABLE 2 Hanson: ability to grind clinker into cement (figures for FY12 or as at 31 December 2012)

	<i>Ketton plant</i>	<i>Padeswood plant</i>	<i>Ribblesdale plant</i>
Number of active grinding mills	[REDACTED]	[REDACTED]	[REDACTED]
Number of mothballed grinding mills	[REDACTED]	[REDACTED]	[REDACTED]
Daily grinding capacity (active) (kt)*	[REDACTED]	[REDACTED]	[REDACTED]
Daily grinding capacity (active/mothballed) (kt)†	[REDACTED]	[REDACTED]	[REDACTED]
Annual grinding capacity (active) (kt)‡	[REDACTED]	[REDACTED]	[REDACTED]
Annual grinding capacity (active/mothballed) (kt)§	[REDACTED]	[REDACTED]	[REDACTED]
Clinker ground during FY12 (kt)¶	[REDACTED]	[REDACTED]	[REDACTED]
Active grinding capacity utilization (%)#	[REDACTED]	[REDACTED]	[REDACTED]
Current ability to co-grind clinker and GBS?	[REDACTED]	[REDACTED]	[REDACTED]
Current ability to use existing mill as a GGBS plant	[REDACTED]	[REDACTED]	[REDACTED]

Source: Hanson's response to co-grinding questions.

*Grinding capacity per day based on active grinding mills (kt). Hanson calculated this as annual grinding capacity divided by 366 days.

†Grinding capacity per day based on active + mothballed grinding mills (kt). Hanson calculated this as annual grinding capacity divided by 366 days.

‡Grinding capacity per year based on active grinding mills (kt). Hanson based its annual grinding capacity based on its ultimate parent company's (HeidelbergCement AG) capacity model, using the formula: grinding mill output (tonnes per day) x Reliability Coefficient x (366 days less planned maintenance downtime).

§Grinding capacity per year based on active and mothballed grinding mills (kt).

¶Clinker actually ground in active mills during FY12 (kt).

#Active grinding capacity utilized in FY12 (% of grinding capacity per year based on active grinding mills).

Note: Figures are based on FY12 or as at 31 December 2012. We note that Hanson already has GGBS plants for the purpose of dedicated GBS grinding to produce GGBS.

7. Hanson told us that whilst its Padeswood plant had two 'very small' grinding mills that were mothballed, these had been disconnected from the silos and it therefore considered that it was unlikely they would ever be run in the future. It also added that the current level of spare capacity only existed 'by virtue of the reduction in demand for RMX', and that it would 'require this capacity if the RMX market increased in the future and as such it would cease to be spare'.
8. Hanson told us that a clinker grinding mill in its current form could not grind GBS and produce GGBS, although with modifications and significant investments it could hypothetically incorporate the drying process required for GGBS. Whilst co-grinding to produce a higher quality output was possible, it told us that there were commercial considerations that made this considerably less attractive, eg the grinding process could be amended to grind both GBS and GGBS, but the requirements for the storage of GBS and clinker were different. It added that grinding of GBS did not necessarily have to be adjacent to a steelworks.¹
9. However, Hanson told us that the costs and complexity of these modifications would vary between each site and individual grinding mill, depending on the civil structure, location, feed hoppers, process to extract from the mill, storage silos and transportation methods. It estimated, however, that any modification would take at least [REDACTED] months, but this could increase if planning permission would be required or unforeseen complications arose.

¹ Summary of GGBS response hearing with Hanson, paragraph 34.

Cemex: ability to grind GBS to GGBS

10. Table 3 below shows Cemex's current availability of clinker grinding capacity and its ability to either co-grind or use an existing clinker grinding mill as a dedicated GBS grinding mill, ie similar to a GGBS plant.

TABLE 3 **Cemex: ability to grind clinker into cement (figures for FY12 or as at 31 December 2012)**

	<i>Rugby plant</i>	<i>South Ferriby plant</i>	<i>Tilbury grinding station</i>
Number of active grinding mills	[REDACTED]	[REDACTED]	[REDACTED]
Number of mothballed grinding mills	[REDACTED]	[REDACTED]	[REDACTED]
Daily grinding capacity (active) (kt)*	[REDACTED]	[REDACTED]	[REDACTED]
Daily grinding capacity (active/mothballed) (kt)†	[REDACTED]	[REDACTED]	[REDACTED]
Annual grinding capacity (active) (kt)‡	[REDACTED]	[REDACTED]	[REDACTED]
Annual grinding capacity (active/mothballed) (kt)§	[REDACTED]	[REDACTED]	[REDACTED]
Cement produced during FY12 (kt)¶	[REDACTED]	[REDACTED]	[REDACTED]
Active cement capacity utilization (%)#	[REDACTED]	[REDACTED]	[REDACTED]
Current ability to co-grind clinker and GBS?	[REDACTED]	[REDACTED]	[REDACTED]
Current ability to use existing mill as a GGBS plant	[REDACTED]	[REDACTED]	[REDACTED]

Source: Cemex's response to co-grinding questions.

*Grinding capacity per day based on active grinding mills (kt).

†Grinding capacity per day based on active + mothballed grinding mills (kt).

‡Grinding capacity per year based on active grinding mills (kt).

§Grinding capacity per year based on active and mothballed grinding mills (kt).

¶Whilst we requested figures for the clinker ground during FY12, Cemex was only able to provide cement production figures.

#[REDACTED]

Note: Figures are based on FY12 or as at 31 December 2012.

11. Cemex told us that only its Tilbury grinding station might be converted: (a) to enable co-grinding; or (b) to a dedicated GBS grinding plant. It estimated that this investment could be around £[REDACTED] million, but highlighted that it had not considered this possibility before, and therefore this was a highly approximated figure.

HCM: ability to grind GBS to GGBS

12. Table 4 below shows HCM's current availability of clinker grinding capacity and its ability to either co-grind or use an existing clinker grinding mill as a dedicated GBS grinding mill, ie similar to a GGBS plant.

TABLE 4 HCM: ability to grind clinker into cement (figures to 31 July 2013 or as at 31 July 2013)

	Hope plant
Number of active grinding mills	[X]
Number of mothballed grinding mills	[X]
Daily grinding capacity (active) (kt)*	[X]
Daily grinding capacity (active/mothballed) (kt)†	[X]
Annual grinding capacity (active) (kt)‡	[X]
Annual grinding capacity (active/mothballed) (kt)§	[X]
Clinker ground during H1 FY13 (kt)¶	[X]
Active grinding capacity utilization (%)#	[X]
Ability to co-grind clinker and GBS?	[X]
Current ability to use existing mill as a GGBS plant	[X]

Source: HCM's response to co-grinding questions.

*Grinding capacity per day based on active grinding mills (kt).

†Grinding capacity per day based on active + mothballed grinding mills (kt).

‡Grinding capacity per year based on active grinding mills (kt).

§Grinding capacity per year based on active and mothballed grinding mills (kt).

¶Clinker actually ground in active mills during first six months of FY13 (kt).

#Active grinding capacity utilized during first six months of FY13 (% of grinding capacity based on active grinding mills).

Note: Figures are to 31 July 2013 or as at 31 July 2013.

Assessment of the incentive of GB cement producers to co-grind

13. In relation to determining whether a GB cement producer would have the incentive to co-grind, we considered the following factors:
- (a) the relative prices on CEM I and blended cement sales;
 - (b) the downstream demand for pre-blended cement; and
 - (c) the advantages and disadvantages of co-grinding.

Relative prices on CEM I and blended cement sales

14. Based on FY12 cement sales, Table 5 sets out the split of sales volumes and gross revenues between bulk CEM I cement, bulk blended cement and bagged cement for the GB cement producers for FY12, ie Lafarge, Hanson, Cemex and Tarmac.

TABLE 5 FY12 cement sales volumes and gross revenues split by bulk (CEM I and blended) and bagged cement

kt				
Sales volumes	Bulk CEM I cement	Bulk blended cement*	Bagged cement	Total (FY12)
Lafarge	[redacted]	[redacted]	[redacted]	[redacted]
% of total	[redacted]	[redacted]	[redacted]	[redacted]
Hanson	[redacted]	[redacted]	[redacted]	[redacted]
% of total	[redacted]	[redacted]	[redacted]	[redacted]
Cemex	[redacted]	[redacted]	[redacted]	[redacted]
% of total	[redacted]	[redacted]	[redacted]	[redacted]
Tarmac	[redacted]	[redacted]	[redacted]	[redacted]
% of total	[redacted]	[redacted]	[redacted]	[redacted]
£'000				
Gross revenues†	Bulk CEM I cement	Bulk blended cement*	Bagged cement	Total (FY12)
Lafarge	[redacted]	[redacted]	[redacted]	[redacted]
% of total	[redacted]	[redacted]	[redacted]	[redacted]
Hanson	[redacted]	[redacted]	[redacted]	[redacted]
% of total	[redacted]	[redacted]	[redacted]	[redacted]
Cemex	[redacted]	[redacted]	[redacted]	[redacted]
% of total	[redacted]	[redacted]	[redacted]	[redacted]
Tarmac	[redacted]	[redacted]	[redacted]	[redacted]
% of total	[redacted]	[redacted]	[redacted]	[redacted]

Source: Responses from the GB cement producers to the post provisional findings information request.

*Bulk blended cement means CEM II, III and IV.

†Gross revenues mean the sales revenues net of any rebates and discounts, but including delivery charges.

15. Based on Table 5 above, as a percentage of total cement sales volumes, sales of bulk blended cement were limited for all of the GB cement producers during FY12: [redacted] per cent for Lafarge and [redacted] per cent for Cemex at one end, and [redacted] per cent for Hanson and Tarmac. The proportions accounted for by bulk blended cement were relatively similar for their respective gross revenues: [redacted] per cent for Lafarge, [redacted] per cent for Cemex, and [redacted] per cent for each of Hanson and Tarmac.
16. In relation to its blended cement sales, Hanson told us that the proportion of its cement sales accounted for by cement pre-blended with GGBS was zero, although a 'negligible' and 'immaterial' amount was blended with Calumite and was sold to one customer for use in [redacted], with annual volumes of less than [redacted].
17. Table 6 below sets out the average gross revenue per tonne for bulk CEM I cement sales, bulk blended cement sales, and bagged cement sales for FY12.

TABLE 6 FY12 average gross revenue per tonne for sales of bulk (CEM I and blended) and bagged cement

£/t				
Unit gross revenue*	Bulk CEM I cement	Bulk blended cement†	Bagged cement	Total (FY12)
Lafarge	[redacted]	[redacted]	[redacted]	[redacted]
Hanson	[redacted]	[redacted]	[redacted]	[redacted]
Cemex	[redacted]	[redacted]	[redacted]	[redacted]
Tarmac	[redacted]	[redacted]	[redacted]	[redacted]

Source: Responses from the GB cement producers to the post-provisional-findings information request.

*Gross revenues mean the sales revenues net of any rebates and discounts, but including delivery charges.

†Bulk blended cement means CEM II, III and IV.

18. Based on Table 6 above, the average unit gross revenue for bulk blended cement was consistently lower than the unit gross revenue for bulk CEM I sales: Lafarge

(£[redacted] for bulk blended cement and £[redacted] for bulk CEM I cement), Tarmac (£[redacted] and £[redacted]), Hanson (£[redacted] and £[redacted]) and Cemex (£[redacted] and £[redacted]). This suggests that pre-blended cement prices would likely be lower than CEM I, and it would be relatively less attractive for a GB cement producer to use its existing clinker grinding mill to produce pre-blended cement at the expense of CEM I cement production.

19. Based on our assessment, we considered it unlikely that co-grinding would represent a more profitable utilization of clinker grinding capacity compared with grinding only clinker.

Downstream demand for pre-blended cement or self-blending

20. Hanson told us that in the UK, GGBS was usually supplied as a separate component for concrete and was added at the concrete mixer. It added that on occasion specification standards or preferences could influence a customer's decision as to which product to purchase, eg GGBS or PFA. However, Hanson argued that due to the high level of substitutability between GGBS and PFA, this was not common, and that whilst it could not be sure why individual customers chose one product over the other, it considered, based on its experience, that the cubic metre price of RMX and commercial relationships were 'influential'.²
21. Hanson also told us that in Continental Europe, GGBS and PFA were not sold as stand-alone materials to RMX producers, and that cement producers tended to blend GGBS into cement at the upstream level, and then sold the cement blend to RMX customers. It added that since RMX producers required various cement blend mixtures, cement producers would offer a variety of pre-fabricated cement blends. It told us that the 'GB model' provided a more flexible offering by allowing RMX producers to 'dose' their CEM I/GGBS/PFA requirements, and that the UK RMX industry operated on this basis, and had developed as such to demand the 'self-blend flexibility', which Hanson argued increased competition between cement producers.
22. Lafarge Tarmac provided us with a report from CEMBUREAU published in 2010,³ which provided an overview of blended cements used in the EU member states and other countries. Lafarge Tarmac told us that whilst GGBS and PFA were predominantly blended with cement at the downstream level in the UK, in contrast to some other European countries, it suggested that when benchmarking the level of clinker replacement in the UK with other European countries, there was scope for further clinker replacement in the UK, and that GGBS was key to driving further clinker replacement in GB since it could achieve higher clinker replacement than PFA or limestone.
23. We also noted the comments from some parties that expressed a preference for either PFA or GGBS, which suggested that pre-blended cement production may reduce product choice for customers:
 - (a) CPV told us that its cement blended particularly well with PFA, and that there were technical reasons why customers might choose to use PFA instead of GGBS.⁴

² *ibid*, paragraph 10.

³ CEMBUREAU, 'Cements for a low-carbon Europe' (published 2010).

⁴ [CPV response hearing summary](#), paragraph 27.

(b) Brett Group told us that it had bought GGBS since the 1980s and preferred it to PFA, eg GGBS worked better in its RMX plants given that PFA had different handling characteristics.⁵

24. In our view, there were considerable advantages to self-blending at the RMX plant level, given that varying the proportion of GGBS imparted different properties to the concrete, and both concrete producers and end-users of concrete may prefer to have the choice of varying this proportion themselves without this being predetermined by the cement supplier. The relatively low proportion of total bulk cement sales currently accounted for by blended cement suggests that this advantage is considerable (see Table 5 above).
25. There may also be considerable inertia in relation to the uptake of pre-blended cement both in relation to the GB cement producers opting to co-grind and in relation to changing industry practice among the downstream customers to purchase pre-blended cement rather than self-blend. We considered that concrete produced through self-blending was 'effectively identical' to concrete made from blended cement.⁶
26. Based on our assessment, we found it highly unlikely that demand for pre-blended cement (ie from co-grinding) in GB would increase significantly. We would therefore not expect the GB cement producers to be highly incentivized to opt for co-grinding. In particular, we considered that there would not only be general inertia that would be associated with changing a widely accepted industry practice, but also, the loss of greater flexibility afforded by self-blending may result in customers being resistant to such changes.

Advantages and disadvantages of co-grinding

27. Lafarge Tarmac told us that one of the issues of co-grinding would be that GBS was inherently a harder substance than clinker, and therefore co-grinding the GBS to a specific fineness necessitated that the clinker component was effectively 'over-ground', ie excess power consumption which increases with increasing levels of GBS. Therefore, Lafarge Tarmac told us that dedicated GBS grinding would be a more efficient and preferable process than co-grinding. It added that instead of co-grinding, once the GBS was ground into GGBS in a dedicated GBS grinding plant, it could then either be added to a clinker grinding mill together with other additions (eg gypsum), or blended with the cement at a blending station.
28. A similar argument was made by another source, where we noted that in the past most of the 'blast furnace slag cement' had been produced by grinding GBS and clinker together. However, according to this source, since GBS was harder to grind than clinker, co-grinding left the GGBS coarser than the cement, which was not considered desirable since the 'slow hydrating GGBS' should be finer than the cement. The source also stated that grinding the GBS separately from the clinker had the advantage of permitting the GBS and clinker to be ground to their own optimum fineness.⁷

⁵ [Brett Group response hearing summary](#), paragraph 25.

⁶ Paragraph 5.45(a).

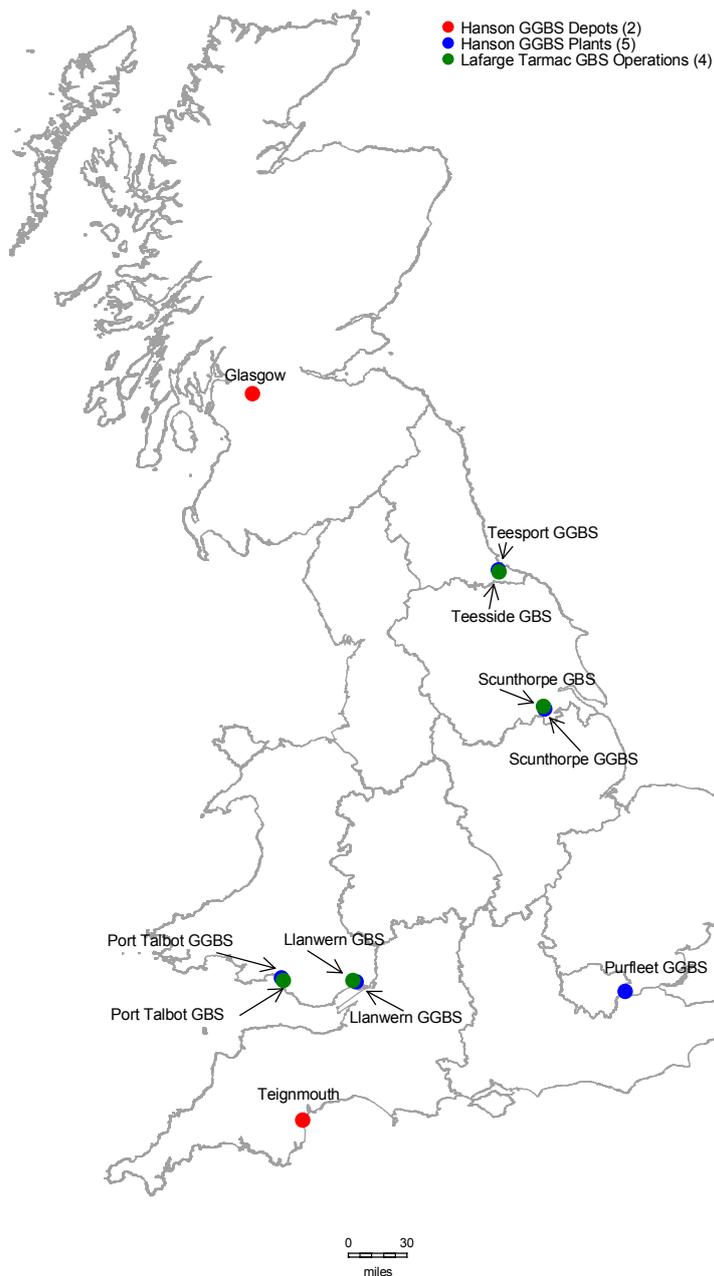
⁷ Presentation on '[History of slag cements](#)' (1981), p6.

GB map of GGBS plants and depots and GBS plants

- Figure 1 below shows a map of the locations of each GGBS plant and depot, and GBS plants.

FIGURE 1

Locations of GBS and GGBS sites in GB



Source: Lafarge Tarmac and Hanson.

Note: Hanson also owns a dormant depot in Belfast, which is not shown on this map. Lafarge Tarmac operates three active GBS plants at Port Talbot, Scunthorpe and Teesside, each of which is co-located at a steelworks. The Llanwern GBS plant was mothballed in 2002 when the Llanwern steelworks closed. Hanson operates three active GGBS plants, these are the Port Talbot, Purfleet and Scunthorpe GGBS plants; and two mothballed GGBS plants at Llanwern ([]) and Teesport, close to the Teesside GBS plant and Teesside steelworks. Hanson operates two depots in GB: Teignmouth and Glasgow.

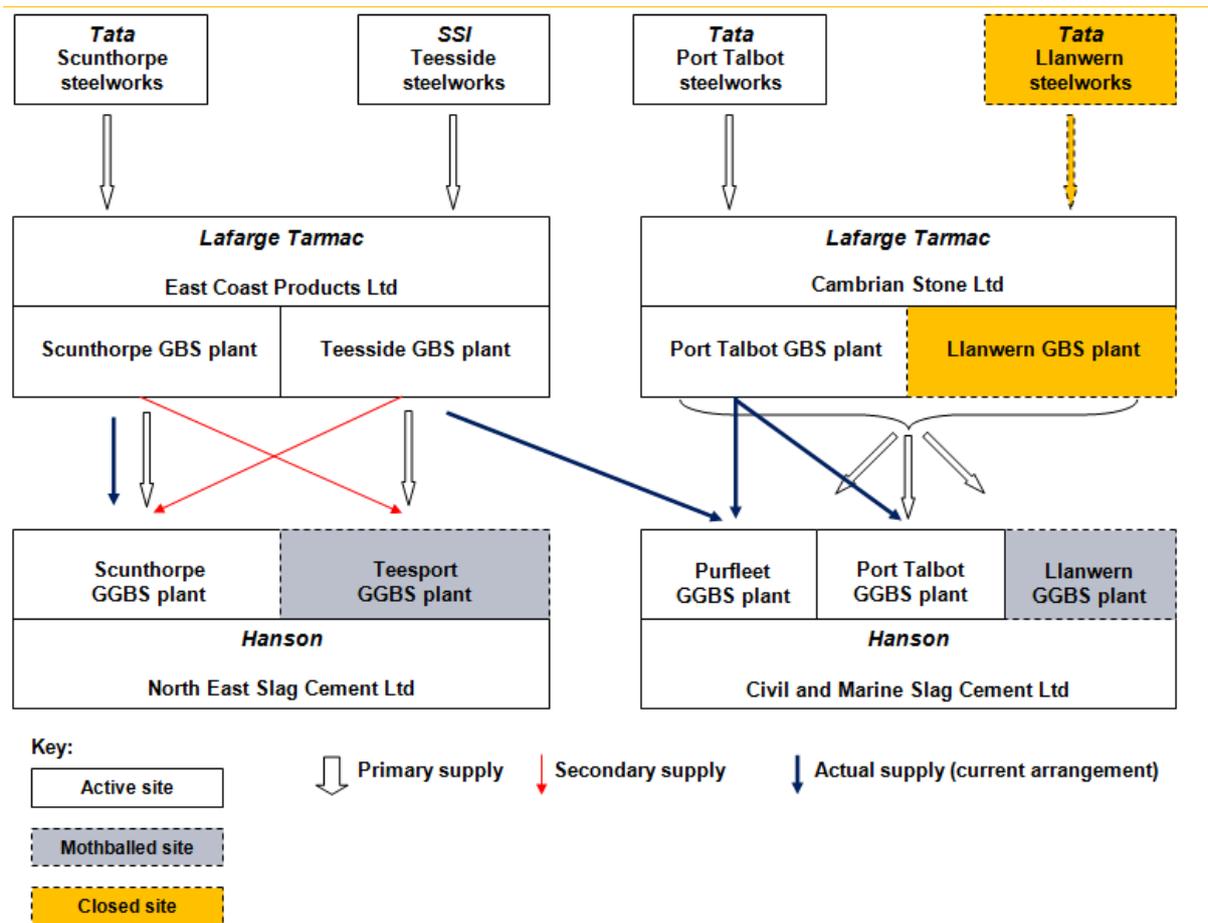
Diagram illustrating how the GBS agreements govern GBS supply

Introduction

- Figure 1 below illustrates how the three supply agreements that comprise the current GBS agreements govern Lafarge Tarmac's supply of GBS to Hanson.

FIGURE 1

GBS supply under the GBS agreements



Source: [X].
Notes: [X].

- [X]
- [X]

Supporting analysis of the scope of the GGBS plant divestiture remedy

Introduction

1. This annex sets out background analysis to enable us to determine the scope of the GGBS plant divestiture remedy. For this purpose, we addressed the following areas which we considered relevant to our design of an effective divestiture package:
 - (a) continuity of supply risks concerning GBS production (see paragraphs 2 to 31);
 - (b) likely approach of divested GGBS plants to sourcing GBS (see paragraphs 32 to 43); and
 - (c) the distribution capabilities of GGBS plants (see paragraphs 44 to 47).

GGBS remedy: continuity of supply risks concerning production of GBS

2. One of the key reasons highlighted by Hanson for the need for GBS supply exclusivity was the risk that GBS supply might be disrupted at one or more of the three GB steelworks. Hanson told us that a long-term exclusive contract was required because of the uncertainty of steel production and the likelihood that the associated availability of GBS from relevant plants would cease or be suspended, eg when the Teesside steelworks closed Hanson was obligated to mothball its Teesside GGBS plant. It also told us that there was still a need for exclusivity due to the uncertain future of the steel industry, customers needed security of supply to know that if one plant was no longer operating then it could still purchase GGBS.
3. Hanson added that there was no direct contractual relationship between it and the steelworks that guaranteed any supply of BFS or GBS. It considered that the absence of this guarantee explained the 'extreme risks and fragility' of its GGBS operations. It also told us that the production of BFS for granulation was incidental to the steelworks' process and that its GBS agreements merely facilitated the demands of the steel industry in this respect by providing the service to take away and re-process the by-product which would otherwise constitute waste. It added that production and capacity decisions by the steel producers were taken according to their iron and steel strategy, and that this (and consequently the availability of GBS) was something over which Hanson had no control, creating very significant risk at the GGBS level of the industry.
4. By contrast, SSI told us that, in its view, the agreement between Lafarge Tarmac and Hanson afforded the kind of security that very few businesses had.¹
5. In assessing the risks of discontinuity of GBS supply, we considered below the nature of this risk and the likelihood of this risk arising.

(a) Nature of the supply risks concerning GBS

6. First, in relation to the nature of this risk, the production of GBS relies on the production of BFS, a by-product of the iron blast furnace (blast furnace) that is located at an

¹ SSI response hearing summary, paragraph 36.

integrated steelworks, where there may be more than one blast furnace. The molten BFS can either be tapped off from the blast furnace into a granulator (or pelletiser²), which quenches the BFS with water, also known as water-cooling, to produce GBS (or pellite), or allowed to drop into a pit and air-cooled, which can then be further processed to produce a type of aggregate: air-cooled slag. Whilst the GBS grinding activities can take place away from the steelworks, the process of water-cooling the BFS must take place at source, and therefore a granulator (or pelletiser) is bolted on to the blast furnace and effectively forms an integral part of the blast furnace.

7. Consequently, when assessing the continuity of supply risks concerning GBS, it is necessary to consider the continuity of supply risks concerning BFS, ie the risks that either the blast furnace ceases to operate or a steelworks ceases production altogether. We assess these risks below.
8. In Appendix 13.5, Annex E, Supplement 2, Table 2, we compared annual BFS production by each steelworks over the period FY10 to FY12, against the BFS production capacity of their respective blast furnaces. Based on our calculation of the BFS capacity utilization rates, only the Scunthorpe steelworks produced BFS while operating at full capacity, whilst BFS capacity utilization at the Port Talbot steelworks was at [redacted] and [redacted] per cent in FY10 and FY11 respectively, before falling to [redacted] per cent in FY12. In relation to the Teesside steelworks, BFS capacity utilization was [redacted] per cent in FY10, [redacted] in FY11 and [redacted] per cent in FY12. Whilst these figures show that BFS production can be subject to significant swings from year-to-year, we would also note that there are a number of reasons why historic levels of BFS production may not be indicative of future levels of BFS production:
 - (a) Tata Steel told us that [redacted].³ We would expect the [redacted] (see also paragraph 31 below).
 - (b) SSI told us that the Teesside steelworks was mothballed in March 2010,⁴ for reasons which are discussed below, and only resumed production in April 2012 under its ownership. It also told us that since reopening, production was ramped up, and that it was now achieving record production figures.⁵
9. Therefore, given the forward-looking nature of an assessment of remedies, although we noted the scope for variability in BFS production volumes, we placed limited weight on the changes in BFS production volumes seen over the last three years, as a guide to levels and variability of future BFS production.

(b) Likelihood of the supply risks concerning GBS

10. We considered the likelihood of BFS supply being disrupted. This is an aspect of the supply chain that is under the control of the GB steel producers and therefore beyond the control of Lafarge Tarmac and Hanson that both operate further downstream along the GGBS supply chain. An assessment of the risks concerning the continuity of BFS or GBS supply is effectively an assessment of the risks concerning the continuity of GB steel production and of which of the three GB steelworks would continue to operate into the future.

² SSI told us that whilst GBS was sandy and had similar consistency, pellite could be considered as a less consistent version of GBS, comprising of a mix of small granules, half-inch stones and clusters. It added that it understood pellite to be used primarily for cement replacement in the manufacture of concrete, and that concrete produced with pellite had greater consistency and also had the aesthetic advantage of producing a white finish (SSI response hearing summary, paragraph 29).

³ Tata Steel response to Remedies Notice, p2, paragraph c).

⁴ SSI response hearing summary, paragraph 2.

⁵ *ibid*, paragraph 4.

11. Looking first at the overall levels of production, since 1971, annual UK demand for steel declined by 35 per cent from around 16 Mt in 1971 to 10 Mt in 2011. Of this 10 Mt of demand in 2011, 45 per cent (4.7 Mt) was met by UK production whilst the remainder was met by imported steel. UK steel producers also exported 4.6 Mt of steel. Since 2007 when UK production was 14 Mt, production has declined year-on-year, down to 9.5 Mt in 2011, with the sharpest drop in 2008 when production fell from 13.5 Mt in the previous year to 10.1 Mt (see Appendix 13.5, Annex H).
12. We asked each of the GB steel producers about the risks concerning their steel production activities. We first considered, in general terms, the risk of BFS production being disrupted at a particular steelworks, eg for engineering or commercial reasons.
13. Tata Steel told us that [redacted].⁶ [redacted] continuity of BFS supply may necessitate that a buyer acquires and operates multiple sources of GBS.⁷ However, Tata Steel also told us that it [redacted],^{8,9} and that its blast furnaces operated constantly all year round and that there was no seasonality to its production runs.¹⁰ It also told us that [redacted].¹¹ It added that a key element of its operations was the reliability and availability of its machinery and equipment of which the blast furnace operations were core, and told us that if a blast furnace stopped, then 'everything stopped'.¹²
14. SSI told us that there should be no concerns regarding continuity of supply of BFS, as the blast furnace operations, being continuous, would constantly generate slag.¹³ It added that it would normally expect to operate a blast furnace continuously over its operating life (approximately 15 years depending on the quality of any relining of the blast furnace). It told us that switching off a blast furnace would result in causing the inner lining of a blast furnace to crack, and therefore BFS production could not simply be switched on or off. It also told us that when a blast furnace required relining, it could take around three months, but this could be up to six months depending on the availability of labour and whether a blast furnace was also being upgraded as part of its relining.¹⁴
15. SSI told us that whilst there could be monthly or quarterly volatility in steel demand for some product sectors, it did not consider the steel markets to be very volatile in the medium-term. For example, it told us that car manufacturers were highly operationally geared and therefore would try to maximize car production even when there were low levels of demand and this provided the steel industry with some stability.¹⁵
16. We considered the risk profile of each steelworks in GB:
 - (a) SSI told us that steel was a globally traded commodity that could be shipped around the world relatively easily and cheaply. It told us that the market drivers for steel could affect individual steelworks in different ways, eg given that its Teesside steelworks exported virtually all of its production, its demand and prices were driven by the Thai and South-East Asian economies. It added that the

⁶ [Tata Steel response to Remedies Notice](#), p2, paragraph c).

⁷ [ibid](#), p3, paragraph b).

⁸ The relining of a blast furnace involves replacement of the materials that line the inside wall of a blast furnace hearth. Such works would commence once the blast furnace concerned ceases production and has cooled.

⁹ [Tata Steel response hearing summary](#), paragraph 11.

¹⁰ [ibid](#), paragraph 16.

¹¹ [ibid](#), paragraph 23.

¹² [ibid](#), paragraph 10.

¹³ [SSI response to Remedies Notice](#), p2, paragraph B.

¹⁴ [SSI response hearing summary](#), paragraph 18.

¹⁵ [ibid](#), paragraph 13.

demand cycle in South-East Asia, which was dependent on demand from China, might be different from, and counter-cyclical to, demand in the UK.¹⁶

(b) Tata Steel told us that its Port Talbot works produced and supplied steel, which was used for example, in the automotive industry,¹⁷ whilst its Scunthorpe works predominantly produced 'long products', eg rail sections and beams.¹⁸

17. In SSI's view, determining the relative risk profile of each steelworks was largely an academic one, eg since SSI's Teesside steelworks was effectively a single product company, this could be regarded as increasing its risk profile, but the fact that it produced a 'homogenous' product could reduce its risk profile as it meant that there would always be an outlet for its product since it faced no 'geographic boundaries' and its product could be shipped around the world fairly cheaply and easily.¹⁹
18. SSI told us that it would be difficult to predict the outlook for the GB steel industry, as steel was traded worldwide and subject to the dynamics of global supply and demand.²⁰ It added that the outlook for SSI depended on the buoyancy of the global construction industry, as well as demand in South-East Asia. Since it considered there to be very few trade barriers left in the world, an increase in demand in one part of the world, could result in a shortage in other parts of the world, thus a 'booming' economy in one place would help steel industries elsewhere by absorbing their excess production.
19. We considered the position of the Teesside steelworks and sought to understand the primary reason behind its closure in 2010 and assess whether its risk profile has changed under SSI's ownership.
20. SSI told us that the Teesside steelworks was eventually mothballed in March 2010 following the withdrawal in 2009 of a major long-term offtake contract that accounted for virtually all of the steelworks' output, and 'significantly prejudiced' its future viability. It told us that negotiations between Tata Steel and SSI commenced in late 2010,²¹ which concluded with SSI acquiring the Teesside steelworks whilst Tata Steel retained its co-located beam mill activities that used the steel slab produced from the steelworks.²² It told us that following some initial delays, it commenced production at the Teesside steelworks in April 2012.²³
21. SSI explained to us the rationale for its acquisition of the Teesside steelworks. It told us that prior to its acquisition of the Teesside steelworks, it had operated entirely downstream from any steel production activities, owning rolling mills to process the steel slab into more manufactured products that could be used by the car and white goods industry. It told us that the acquisition of the Teesside steelworks represented a vertical integration into the upstream production of steel. It added that the Teesside steelworks operated a different business model from that operated under Tata Steel ownership, and that under its ownership, the Teesside steelworks had greater future visibility of volumes from its operations, and that it expected volumes to stay at this level for the foreseeable future. The fact that SSI substantially guarantees the downstream demand for the Teesside steelworks represents, in our view, a fundamental

¹⁶ [ibid](#), paragraph 11.

¹⁷ [Tata Steel response hearing summary](#), paragraph 4.

¹⁸ [ibid](#), paragraph 5.

¹⁹ [SSI response hearing summary](#), paragraph 11.

²⁰ [ibid](#), paragraph 12.

²¹ [ibid](#), paragraph 2.

²² [ibid](#), paragraph 3.

²³ [ibid](#), paragraph 4.

difference in the risk profile of the Teesside steelworks under SSI's ownership compared with Tata Steel's ownership.

22. Tata Steel considered that it [REDACTED].^{24,25} It also told us that it had invested heavily in the business, and considered its owner and parent to have been extremely supportive.²⁶
23. Ultimately, SSI told us that any decision to close its steelworks would be a financial one. It added that it had not considered how far the price of steel should drop, or the maximum level of losses that could be sustained before closure might be considered. However, it told us that it would struggle to come up with a realistic scenario whereby its Teesside steelworks would not be able to sell its output to the market.²⁷
24. We also found no evidence to suggest that GB steel production would be scaled back.
25. Following commencement of production at the Teesside steelworks in April 2012, SSI told us that production was ramped up, and that it was currently achieving record production levels.²⁸ It estimated that it would produce 3.2 Mt of steel slab during 2013.²⁹ It told us that almost all of its production was exported, predominantly supplying SSI's own downstream operations in Thailand and in South-East Asia, but also externally, [REDACTED].³⁰
26. In its response to our provisional decision on remedies, Hanson told us that whilst the CC appeared to have concluded that there was no risk in the steel industry, it considered that the closures at the Llanwern steelworks and previously at the Teesside steelworks itself did not bear out this view, as well as the ongoing cuts at the Scunthorpe steelworks or the decision not to proceed this autumn with the scheduled capex and relining of the Queen Anne blast furnace (at the Scunthorpe steelworks).³¹
27. Hanson also told us that whilst the GB steel producers were important commentators on the inherent risks of closures in the GB steel industry, Hanson would expect them to suggest a positive outlook for GB steel production as a matter of course. However, it argued that the inherent risk could not be dismissed outright, and told us that history had shown that the GB steel supply was far from predictable. It added that merely limited changes of the steel supply due to temporary strategy, or mid-term furnace closure, could significantly reduce the availability of GBS.³²
28. Hanson also told us that its understanding in relation to the 'critical risks in the steel industry' may have 'material adverse effects' with regard to the supply of GBS, especially in respect of 'SSI's position at Teesside'. It told us that the CC had preferred to rely on the public statements and submissions of the steel producers that there was little risk of steel plant or furnace closure (or reductions in production) in the near future. In relation to SSI's Teesside steelworks, Hanson told us that it was 'clear that SSI is now in significant financial trouble as shown by the concerns raised in its audited results for 2012'. Hanson added that the auditors to SSI's parent company had qualified the statutory accounts with a formal warning that there was 'significant doubt on the company's ability to continue as a going concern'.

²⁴ [Tata Steel response hearing summary](#), paragraph 8.

²⁵ [ibid](#), paragraph 11.

²⁶ [ibid](#), paragraph 10.

²⁷ [SSI response hearing summary](#), paragraph 14.

²⁸ [ibid](#), paragraph 4.

²⁹ [ibid](#), paragraph 6.

³⁰ [ibid](#), paragraph 7.

³¹ [Hanson response to the provisional decision on remedies](#), paragraph 6.9.

³² [ibid](#), paragraph 6.10.

29. We recognized that the outlook for the UK steel industry was intricately tied to the outlook of the global steel industry and the industries that ultimately drive the demand for steel. However, we considered that having regard to any lack of visibility in relation to the global outlook for steel, the evidence was consistent with the view that despite difficult current market conditions, the GB steel producers have not indicated any intention to scale back their production. We also considered that the recent acquisition by SSI of the Teesside steelworks could be regarded as an indication of investor confidence in the UK steel industry, which together with the significant investments recently made by both Tata Steel and SSI suggested a rather more positive outlook for the UK steel industry than that painted by Hanson. We were inclined to place significant weight of the views and actions of the GB steel producers in forming our own view about the outlook for the UK steel industry. This evidence suggested that, looking ahead, the risks of major discontinuity of GBS supply were relatively modest.
30. We noted that we received no further evidence from SSI since the publication of the provisional decision on remedies to suggest that it either intended to scale back production or foresaw a major reduction in its future production levels. In relation to Hanson's views on the risks concerning SSI and its Teesside steelworks, we noted that the Teesside steelworks had only been reactivated in early 2012 and had been ramping up its production since then. We would therefore not consider its 2012 performance to be a representative year or a strong indicator of the steelworks' future ongoing performance.
31. We also asked each of the GB steel producers to provide us with an update in December 2013 on their expected annual production out-turn for 2013, and their forecast annual production for 2014. Tata Steel told us that for 2013, it expected annual iron production to be [redacted] kt at Scunthorpe and [redacted] kt at Port Talbot, which it expected to [redacted] kt and [redacted] kt respectively for 2014. [redacted], where Tata Steel told us that the Scunthorpe steelworks had capacity to produce around [redacted] Mt of iron, and the Port Talbot steelworks had capacity to produce between approximately [redacted] and [redacted] Mt of iron. SSI told us that its steel production would be 2.8 Mt in 2013, and forecast production to be higher in 2014 than on 2013 levels.

Likely approach of divested GGBS plants to sourcing GBS

32. We next considered what approach might be taken by an owner of a divested GGBS plant in sourcing GBS. As part of this, we considered the extent to which individual GGBS plants would be able to source GBS from multiple GBS plants. We judged this to be a relevant consideration given the current configuration of GBS and GGBS plants and their locations across GB. Appendix 13.5, Annex C, Figure 1, is a map of GBS and GGBS sites, which shows GGBS plants that are co-located with a GBS plant at both the Port Talbot and Scunthorpe steelworks. Hanson confirmed to us that its Port Talbot and Scunthorpe GGBS plants were respectively located within the Port Talbot and Scunthorpe steelworks, whilst its mothballed Teesport GGBS plant was located very close to the Teesside steelworks.
33. Table 1 below shows the estimated maximum GGBS that could be produced from the GBS produced at each GBS plant, assuming we adopt the historic conversion rates in relation to the percentage of BFS that is water-cooled to produce GBS. We therefore assumed that: (a) the GBS plants and steelworks were operating at full capacity; and (b) [redacted] per cent of BFS volumes was processed into GBS at the Port Talbot GBS plant; [redacted] per cent at the Scunthorpe GBS plant; and [redacted] per cent at the Teesside GBS plant, with the balance of BFS volumes used to produce air-cooled slag instead of GBS (see Appendix 13.5, Annex E, Supplement 2, Table 1). Based

on this, we compared the maximum GGBS production figure possible under this scenario, with the GGBS production capacity of each of Hanson's GGBS plants.

TABLE 1 GGBS production based on historic conversion of BFS into GBS*

GBS plant*	GBS	GGBS equivalent†	kt		
			GGBS plant	GGBS	Difference
Port Talbot ([redacted]% GBS)	[redacted]	[redacted]	Port Talbot	[redacted]	[redacted]
Scunthorpe ([redacted]% GBS)	[redacted]	[redacted]	Scunthorpe	[redacted]	[redacted]
Teesside ([redacted]% GBS)	[redacted]	[redacted]	Purfleet	[redacted]	[redacted]

Source: Lafarge Tarmac's and Hanson's response to GGBS questions.

*Based on Appendix 13.5, Annex E, Supplement 2, Table 1, we assumed that [redacted] per cent of BFS was processed into GBS at the Port Talbot GBS plant; [redacted] per cent at the Scunthorpe GBS plant; and [redacted] per cent at the Teesside GBS plant. Tata Steel later told us that the conversion rate of BFS into GBS at the Port Talbot GBS plant was around [redacted] to [redacted] per cent.

†The GGBS equivalent was based on Hanson's assumption that GGBS conversion reduces GBS tonnage by a factor of 10 per cent, eg 1,000 kt of GBS can be ground to produce around 900 kt of GGBS.

34. Based on the analysis in Table 1 above, we took the view that:

- (a) The Port Talbot GGBS plant would be able to source all of its GBS requirements from the co-located GBS plant. In this event, if it produced to its maximum capacity, the Port Talbot GBS plant would generate an annual surplus of GBS that would be roughly equivalent to around [redacted] of GGBS. Tata Steel later told us that the conversion rate from BFS into GBS was between [redacted] and [redacted] per cent, higher than the [redacted] per cent that we had assumed. This would have the effect of increasing the GBS surplus available to sell after the GBS requirement of the Port Talbot GGBS plant had been fully met.
- (b) The Scunthorpe GGBS plant would be able to source around [redacted] per cent of its GBS requirements from its co-located GBS plant, but would need to secure around [redacted] of GGBS equivalent volumes of GBS from another source to reach full capacity.
- (c) Based on its mechanical capacity of [redacted], the Purfleet GGBS plant would not be able to source all of its GBS requirement from the Teesside GBS plant. Even if the Purfleet GGBS plant sourced all the GBS produced by the Teesside GBS plant, it would still require a further [redacted] of GGBS equivalent volumes of GBS (around [redacted] per cent of its requirement) to reach full capacity. However, as noted in paragraph 7.274, Hanson told us that whilst the mechanical capacity of its Purfleet GGBS plant was just under [redacted], its actual grinding capacity was restricted to [redacted] for operational reasons. If we adopted this lower grinding capacity of [redacted] for the Purfleet GGBS plant, then the Teesside GBS plant could supply a significant proportion of the GBS required by the Purfleet GGBS plant, ie excluding pellite which Hanson told us could not be ground into GGBS at the Purfleet GGBS plant. If steel production increased significantly beyond 3 Mt a year at the Teesside steelworks, then this could give rise to a situation where the Teesside GBS plant could produce surplus GBS (as well as pellite) over and above the amount required by the Purfleet GGBS plant.

35. We asked Hanson whether its active GGBS plants that were located at a steelworks (ie at Port Talbot and Scunthorpe) sourced all of their GBS from their nearest GBS plant. Hanson confirmed that this was currently the case, but added that if there was a problem with a blast furnace or a lack of stock, then GBS would be transferred from another site. It also told us that on occasion, there was a need to transfer GBS between GGBS plants for quality reasons, eg it told us that the GBS currently produced [redacted] and was blended with higher quality material (such as that from the [redacted])

steelworks, or from Mittal Ghent—a steelworks owned by ArcelorMittal in Belgium—which was of even better quality). It added that this material was transported to the Purfleet GGBS plant for blending with other materials. By contrast, SSI told us that [REDACTED] the chemical composition of the GBS produced at the Teesside steelworks to be the best compared with GBS produced elsewhere.³³

36. Based on this analysis and looking at the most likely source of GBS supply for each GGBS plant, we took the view that the Port Talbot GGBS plant would seek to source all of its GBS requirement from its co-located GBS plant; the Scunthorpe GGBS plant would be able to secure most, if not all, of its GBS requirement from the collocated GBS plant; and any GBS surplus from the Port Talbot GBS plant, and the entire GBS volumes from the Teesside GBS plant could be used predominantly to supply the Purfleet GGBS plant, and/or address any GBS shortfalls at the Scunthorpe GGBS plant.
37. This expectation would not be dissimilar from the current logistical arrangements between Lafarge Tarmac's GBS plants and Hanson's GGBS plants, where in Appendix 13.5, Annex G, Table 3, between FY10 and FY12:
 - (a) the Port Talbot GBS plant supplied GBS to both the Port Talbot and Purfleet GGBS plants;
 - (b) the Scunthorpe GBS plant supplied all of the GBS requirement of the Scunthorpe GGBS plant; and
 - (c) the Teesside GBS plant supplied all of its GBS volumes to the Purfleet GGBS plant.
38. There is some uncertainty as to whether a new owner of the Purfleet GGBS plant (and absent the exclusive GBS agreements) would continue to source its GBS requirement from the Port Talbot or Teesside GBS plants. In Appendix 13.5, Annex E, Supplement 3, Table 1, we found that based on the landed prices of GBS at the Purfleet GGBS plant, it was able to source GBS somewhat more cheaply from Mittal Ghent (Belgium) at £[REDACTED] per tonne than from either the Port Talbot or Teesside GBS plants at £[REDACTED] and £[REDACTED] respectively. By contrast, based on our analysis in Appendix 13.5, Annex E, Supplement 3, we would not expect imported GBS to be a competitive source of supply for the Port Talbot or Scunthorpe GGBS plants, given the close proximity of their respective local GBS plants. Should the Purfleet GGBS plant source more of its GBS requirements from imported GBS, this could result in the loss of a significant outlet for the Port Talbot GBS plant and particularly the Teesside GBS plant.
39. Based on our assessment, we concluded that the implications on the scope of our GGBS plant divestiture remedy, would be that:
 - (a) A 'captive supply chain' effectively exists between the GBS plant and GGBS plant at the Scunthorpe steelworks. Therefore, under most divestiture scenarios, the Scunthorpe GBS plant would be most likely to supply all of its output to the co-located GGBS plant and would be unlikely to supply GBS to the open market to any material extent.
 - (b) The Port Talbot GGBS plant would be able to source its entire GBS requirement from the co-located GBS plant. The Port Talbot GBS plant would be able to sup-

³³ SSI response hearing summary, paragraph 27.

ply both the Port Talbot GGBS plant, and around [REDACTED] kt of GBS to the open market (based on our estimates).

- (c) The Teesside GBS plant would be able to supply GGBS equivalent volumes of around [REDACTED] to the open market at current BFS output levels.
 - (d) The Purfleet GGBS plant has mechanical capacity to produce up to [REDACTED] of GGBS, but Hanson told us that operationally, the Purfleet GGBS plant could only grind [REDACTED] kt. The Purfleet GGBS plant would have the ability to source GBS from a number of sources, including the Port Talbot and Teesside GBS plants, as well as from GBS imports from Mittal Ghent. However, if we adopted the Purfleet GGBS plant's lower grinding capacity, then it could potentially a significant proportion of its GBS requirement from the Teesside GBS plant.
- 40. Based on the above, we concluded that divestiture of the Scunthorpe and Port Talbot GGBS plants faced relatively few risks in terms of access to GBS, given the ability of both plants to source GBS for GGBS production entirely from GBS sourced from their respective co-located GBS plants. We noted that the Scunthorpe GGBS plant might also be able to source GBS from the Teesside GBS plant given its relative proximity to the Teesside steelworks, eg in the event of any disruption in its local GBS supply.
 - 41. The situation in relation to the Purfleet GGBS plant is somewhat more complex. It is not co-located with a GBS plant and currently takes GBS from several sources, both within and outside GB. It appears able to source GBS somewhat more cheaply from imports than from domestic sources. However, subject to the terms of any divestiture, it would still be able to continue to source GBS from the Teesside and Port Talbot GBS plants. Hanson told us that the [REDACTED].³⁴ We [REDACTED] considered the Purfleet GGBS plant's key attraction to be its location, and its proximity to the markets in the South-East.
 - 42. We took the view that, given the range of GBS supply options available to it, along with its strategic advantages, a divestiture of the Purfleet GGBS plant could also result in an effective and independent competitor.
 - 43. However, we noted that the diversity of its supply options might make a divestiture of the Purfleet GGBS plant more complex to implement and might also have knock-on effects elsewhere in the supply chain. For example, should the Purfleet GGBS plant decide to switch all of its GBS supply to imports, this would remove the main outlet for the GBS produced by the Teesside GBS plant which does not have a currently active co-located GGBS plant, (and would impact to a lesser extent the Port Talbot GBS plant).

The distribution capabilities of a GGBS plant

- 44. The distribution capabilities of a GGBS plant operator can determine its geographic reach and ability to serve a wider geographic customer base, and therefore represents an important aspect of its ability to compete and a key element to the effectiveness of any GGBS plant divestiture remedy.
- 45. In Appendix 13.5, Annex E, Supplement 4, Table 1, we set out the distribution capabilities available to each of Hanson's GGBS plants, which shows that:

³⁴ [Hanson response hearing summary](#), 23 July 2013, paragraph 31.

- (a) All of Hanson's GGBS plants have access to road transport. Hanson told us that once GGBS had been created, it was hauled by bulk tanker to consumers, the majority of which were RMX producers including independents as well as the main cement producers. It told us that it operated a single logistics fleet which serviced both its cement and GGBS deliveries, which currently comprised over [X] vehicles, around [X] of which were owned and the remainder were either committed third-party arrangements or spot hires. In Appendix 13.5, Annex E, Supplement 4, Table 2, we show that both the Purfleet and Scunthorpe GGBS plants despatched all of their GGBS volumes by road.
 - (b) None of Hanson's GGBS plants are rail-linked. However, Hanson told us that this would be possible, subject to major investments into a rail link for the Port Talbot, Purfleet and Scunthorpe GGBS plants should this be necessary.
 - (c) Only the Port Talbot GGBS plant currently had the capability to ship GGBS by sea, which it did using its wharf. Hanson told us that during FY12 the Port Talbot GGBS plant exported around [X] and [X] to its depots at Glasgow and Teignmouth respectively (see also the map in Appendix 13.5, Annex C, Figure 1). In Appendix 13.5, Annex E, Supplement 4, Table 2, we show that between FY10 and FY12, around [X] per cent of GGBS volumes that were despatched from the Port Talbot GGBS plant was by road, with the rest by ship. It added that significant investment would be required to enable its other GGBS plants to be able to export GGBS.
46. As mentioned above, Hanson owns a depot at Glasgow and Teignmouth which during FY12 received all of their GGBS deliveries by ship from the Port Talbot GGBS plant, the only plant with the capability to ship GGBS. In Appendix 13.5, Annex E, Supplement 4, Table 3, we set out the GGBS volumes despatched through these depots, where over the last three years from FY10 to FY12, the Glasgow depot (with a storage facility of around [X] kt of GGBS) accounted for between [X] and [X] per cent of total GGBS volumes handled through its depots, with the Teignmouth depot accounting for the balance.
47. Based on the above, we concluded that:
- (a) Each 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.
 - (b) A divestiture of the Port Talbot GGBS plant, as the only GGBS plant with the capability to ship GGBS, should be accompanied by the divestiture of both the Glasgow and Teignmouth depots which receive GGBS shipments from the Port Talbot GGBS plant.

Production capacity across the GGBS supply chain

Introduction

1. This supplement to Annex E sets out details of the production capacity of:
 - (a) the GB steelworks in relation to BFS;
 - (b) the GBS plants; and
 - (c) the GGBS plants.

The steel producers' BFS production capacity

2. 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 re-opened in April 2012 and is owned by SSI.
3. In relation to iron or steel production capacity:
 - (a) *Port Talbot steelworks*: Tata Steel told us that this steelworks had two blast furnaces and had capacity to [REDACTED].¹
 - (b) *Scunthorpe steelworks*: Tata Steel told us that it was [REDACTED] liquid iron [REDACTED]. Of its four blast furnaces, it told us that only two were currently operational, and that if all four blast furnaces were operated at the same time, they would generate the same output as the two blast furnaces at its Port Talbot works.²
 - (c) *Teesside steelworks*: SSI told us that its Teesside steelworks had one blast furnace that had iron production capacity of more than 3 Mt (based on an estimated current run-rate).³
4. In relation to the production of BFS from each steelworks:
 - (a) *Port Talbot and Scunthorpe steelworks*: Tata Steel told us that if both of its steelworks operated at maximum capacity, they could produce around [REDACTED] of BFS. It added that BFS accounted for around [REDACTED] per cent of the total metal output (between around [REDACTED] to [REDACTED] kg of BFS per tonne of total metal output).⁴
 - (b) *Teesside steelworks*: SSI told us that for each tonne of iron made, around 200 to 300 kg (or 20 to 30 per cent) of BFS was produced. Based on its current iron production volumes of 3 Mt, and a 30 per cent 'BFS rate', it estimated that around 0.9 Mt of BFS was produced each year at its Teesside steelworks.⁵

¹ [Tata Steel response hearing summary](#), paragraph 4.

² *ibid*, paragraph 5.

³ [SSI response to the Remedies Notice](#), footnote i, p4.

⁴ [Tata Steel response hearing summary](#), paragraph 24.

⁵ [SSI response to the Remedies Notice](#), p1.

Lafarge Tarmac's GBS production capacity

5. Table 1 sets out the GBS production capacity by GBS plant.

TABLE 1 Lafarge Tarmac GBS plant production capacity

Steelworks	Current status*	Total capacity (kt)	Active capacity (kt)
Port Talbot†			
Granulator 1	Active	500	500
Granulator 2	Active	500	500
Scunthorpe			
Granulator 1	Active	500	500
Granulator 2	Active‡	225	225
Teesside§			
Granulator	Active	500	500
Pelletiser¶	Active	500	500
		2,725	2,725

Source: Lafarge Tarmac.

*Current status as at 30 June 2013.

†One of the blast furnaces (also known as furnace 'Number 4') at the Port Talbot steelworks was offline between January 2009 and October 2009.

‡One of the blast furnaces (also known as 'Queen Bess') at the Scunthorpe steelworks was offline between January 2009 and December 2009; and since October 2011. Lafarge Tarmac told us that the blast furnace would resume in the final half of 2013. We have assumed that this blast furnace is active given its imminent reactivation.

§All blast furnace activity at the Teesside steelworks ceased from March 2010 to April 2012, when the blast furnace was restarted.

¶The 'pelletiser' plant produces pellite. Lafarge Tarmac treats GBS as including both granulates and pellites.

#Total capacity figures represent 'nameplate capacity'. Lafarge Tarmac told us that actual capacity would be lower due to the blast furnace. It added that it had a target of producing at around 85 per cent of nameplate capacity.

6. A GBS plant can contain more than one granulator (water-cooling equipment that converts the BFS into GBS) depending on the number of active blast furnaces:
- (a) *Port Talbot steelworks*: there are two granulators, where each services one blast furnace given that the configuration of the steelworks meant that the blast furnaces were further apart.⁶
 - (b) *Scunthorpe steelworks*: there are two granulators each serving two of its four blast furnaces.⁷
 - (c) *Teesside steelworks*: there is one granulator and one pelletiser for its single blast furnace.⁸
7. SSI told us that based on its annual BFS production of around 900 kt, around 360 kt (40 per cent) was processed to become GBS, whilst 180 kt (20 per cent) was processed to become 'pellite' (pelletised slag) and around 360 kt (40 per cent) was simply air-cooled. It added that pelletised slag could be further processed through grinding to form substantially the same product as GGBS.⁹

⁶ Tata Steel response hearing summary, paragraph 17.

⁷ ibid, paragraph 17.

⁸ SSI response hearing summary, paragraph 22.

⁹ SSI response to the Remedies Notice, p1.

Hanson's GGBS production capacity

8. Table 2 below sets out the maximum GGBS production capacity of Hanson's GGBS plants (in terms of maximum mechanical grinding capacity).

TABLE 2 Maximum grinding capacity by GGBS plant

<i>kt</i>	
<i>GGBS plant</i>	<i>Grinding capacity*</i>
Port Talbot	[REDACTED]
Purfleet†	[REDACTED]
Scunthorpe	[REDACTED]
Llanwern	[REDACTED]
Teesport	[REDACTED]
Total	[REDACTED]

Source: Hanson's response to GGBS questions.

*Grinding capacity based on the following operating assumptions: 5.5 operating days x 24 hours x 49 weeks for all GGBS plants, except for the Llanwern GGBS plant where 6 operating days were assumed. Hanson told us that this calculation assumed 100 per cent reliability, ie no headroom for breakdowns.

†The Purfleet GGBS plant has [REDACTED] grinding mills with grinding capacities of around [REDACTED].

9. As noted in paragraph 7.274, Hanson told us that the actual grinding capacity at the Purfleet GGBS plant was restricted to [REDACTED] for operational reasons. If we adopted this lower grinding capacity of [REDACTED] for the Purfleet GGBS plant, then the maximum GGBS capacity (based on Hanson's three active GGBS plants) in Table 2 above would decrease from around [REDACTED] to around [REDACTED], and total GGBS capacity for all five GGBS plants would decrease from [REDACTED] to [REDACTED].
10. Hanson told us that the above capacity figures in Table 2 showed the 'hypothetical mere mechanical grinding capacity', and that this capacity measure yielded a far higher number than what a GGBS plant could actually produce. It told us that its calculation of 'true' grinding capacity should take into account the restriction imposed by the actual volumes of GBS made available to it by the granulation stage. Given that there was a limitation on the annual amount of GBS that could be produced, Hanson told us that the total 'effective' GBS production capacity during FY12 was around [REDACTED] (or around [REDACTED] of GGBS). This is set out in Table 3 below.

TABLE 3 Hanson's estimate of 'effective' GBS and GGBS capacity

<i>kt</i>		
<i>GBS supplied to Hanson (FY12)*</i>	<i>GBS</i>	<i>GGBS equivalent†</i>
Port Talbot steelworks	[REDACTED]	[REDACTED]
Scunthorpe steelworks	[REDACTED]	[REDACTED]
Teesside steelworks	[REDACTED]	[REDACTED]

Source: Question 7 of Hanson's response to GGBS/GBS hearing follow-up questions (9 August 2013).

*GB steelworks GBS produced and made available to Hanson during FY12.

†GGBS equivalent based on Hanson's assumption that GGBS conversion reduces GBS tonnage by a factor of 10 per cent.

Summary of production capacity

11. A summary of these production capacity figures is set out in Table 4 below.

TABLE 4 Estimated maximum production capacity for BFS, GBS and GGBS

					<i>Mt</i>	
<i>Steelworks</i>	<i>Iron or steel*</i>	<i>BFS§</i>	<i>GBS plant</i>	<i>GBS</i>	<i>GGBS plant</i>	<i>GGBS</i>
Port Talbot†	[redacted]	[redacted]	Port Talbot	[redacted]	Port Talbot	[redacted]
Scunthorpe	[redacted]	[redacted]	Scunthorpe	[redacted]	Scunthorpe	[redacted]
Teesside‡	[redacted]	[redacted]	Teesside¶	[redacted]	Purfleet	[redacted]
	[redacted]	[redacted]		[redacted]		[redacted]
					<i>Mothballed#</i>	<i>GGBS</i>
					Llanwern	[redacted]
					Teesport	[redacted]
						[redacted]
					<i>per cent</i>	
<i>Steelworks</i>	<i>Iron or steel</i>	<i>BFS</i>	<i>GBS plant</i>	<i>GBS</i>	<i>GGBS plant</i>	<i>GGBS</i>
Port Talbot	[redacted]	[redacted]	Port Talbot	[redacted]	Port Talbot	[redacted]
Scunthorpe	[redacted]	[redacted]	Scunthorpe	[redacted]	Scunthorpe	[redacted]
Teesside	[redacted]	[redacted]	Teesside	[redacted]	Purfleet	[redacted]

Source: Lafarge Tarmac, Hanson, Tata Steel and SSI.

*Iron to steel conversion rate assumed to be 1:1 (source: SSI response hearing).

†Tata Steel told us that the Port Talbot steelworks produced between [redacted] and [redacted] Mt.

‡3 Mt based on achieved record monthly run-rate.

§The proportion of iron accounted for by BFS can vary: Tata Steel estimated between 25.5 and 26.5 per cent. SSI estimated 20 to 30 per cent.

¶The Teesside GBS plant production capacity of [redacted] Mt comprises [redacted] Mt for GBS and [redacted] Mt for pellite (which can be ground into GBS).

#The Llanwern GGBS plant is currently mothballed. [redacted]

Note: The GBS and GGBS plants that are local to each other have been highlighted.

12. Table 4 above shows that currently, total annual iron or steel production capacity in GB is [redacted] Mt, around 25 per cent of which converts into [redacted] Mt of BFS. Maximum GBS production capacity is [redacted] Mt whilst maximum GGBS production capacity is [redacted] Mt (based on active GGBS plants only). We note that this maximum GGBS production capacity would be less at [redacted] Mt, if we adopted Hanson’s lower estimate of the Purfleet GGBS plant’s actual capacity of [redacted] kt (rather than its mechanical capacity of [redacted] kt). We note, however, that based on Hanson’s assumption that GBS converts to GGBS at a rate of [redacted] per cent, based on a maximum GBS production figure of [redacted] Mt, this equates to around [redacted] Mt of GGBS that could be potentially produced if iron production was at full capacity and if almost all of the BFS were water cooled into GBS or pellite. On the basis of the proportion of BFS that had been water cooled in the past, from 60 to 75 per cent depending on the GBS plants, the volumes of GBS available for grinding into GGBS if the steelworks were producing to maximum capacity would be less; around [redacted] Mt of GBS. We note that GGBS production capacity based on total active GGBS plant capacity is currently around [redacted] Mt. We also note that this figure could increase if SSI achieves a higher production figure of just over 4 Mt.¹⁰ However, the above figures represent a theoretical maximum, and in Annex G, we set out the historic actual production figures across the supply chain.

¹⁰ SSI response to the Remedies Notice, footnote i, p4.

Actual production at each stage of the GGBS supply chain

Introduction

1. This supplement to Annex E sets out details of the actual production at each stage of the GGBS supply chain.

BFS produced

2. Table 1 below shows the volumes of BFS and steel slag supplied to Lafarge Tarmac's GBS operations between FY10 and FY12.

TABLE 1 Lafarge Tarmac: BFS and steel slag products, 2010 to 2012

	<i>Port Talbot GBS plant</i>			<i>Scunthorpe GBS plant</i>			<i>Teesside GBS plant</i>		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
BFS volumes purchased (kt):									
To produce GBS*	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
To produce air-cooled slag†	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
BFS volumes purchased (%):									
To produce GBS*	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
To produce air-cooled slag†	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Steel slag purchased (kt)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Sales volumes (kt):									
GBS*	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Air-cooled slag†	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Crushed steel slag‡	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Gross revenues (£m):									
GBS*	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Air-cooled slag†	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Crushed steel slag‡	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: Lafarge Tarmac's response to GGBS questions.

*Lafarge Tarmac treats granulates and pellites as GBS.

†Air-cooled slag is also known as crushed BFS. Air-cooled slag is produced when the molten BFS is poured into pits, air-cooled and then cooled.

‡Steel slag is produced where molten BFS is poured using ladles into pits and air-cooled, then sprayed with water. Steel slag de-metallization and screening requires a screen and/or crusher with the ability to use magnets to separate off free metals.

Note: N/A = not applicable.

3. Based on Table 1 above, we summarized the volumes of BFS produced by the steel-works over the period FY10 to FY12 in Table 2 below, where we also show actual BFS production against maximum production capacity.

TABLE 2 **BFS production against BFS capacity, 2010 to 2012**

	BFS capacity	BFS produced (FY10)	BFS produced (FY11)	BFS produced (FY12)
<i>Steelworks</i>				
Port Talbot	1.1	[REDACTED]	[REDACTED]	[REDACTED]
Scunthorpe	0.8	[REDACTED]	[REDACTED]	[REDACTED]
Teesside	0.9	[REDACTED]	[REDACTED]	[REDACTED]
	2.8	[REDACTED]	[REDACTED]	[REDACTED]
		<i>per cent</i>		
		Capacity utilized	Capacity utilized	Capacity utilized
<i>Steelworks</i>				
Port Talbot		[REDACTED]	[REDACTED]	[REDACTED]
Scunthorpe		[REDACTED]	[REDACTED]	[REDACTED]
Teesside		[REDACTED]	[REDACTED]	[REDACTED]
		[REDACTED]	[REDACTED]	[REDACTED]

Source: Lafarge Tarmac.

*Iron to steel conversion rate assumed to be 1:1.

†Tata Steel told us that the Port Talbot steelworks produced between 4 and 4.5 Mt.

‡3 Mt based on achieved record monthly run-rate.

§The proportion of iron accounted for by BFS can vary: Tata Steel estimated between 25.5 and 26.5 per cent. SSI estimated 20 to 30 per cent.

¶The Teesside GBS plant production capacity of [REDACTED] Mt comprises [REDACTED] Mt for GBS and [REDACTED] Mt for pelletite (which can be ground into GBS).

#The Llanwern GGBS plant is currently mothballed.

Note: The GBS and GGBS plants that are local to each other have been highlighted.

- Based on Table 2 above, maximum capacity utilization appears only to have been achieved consistently at the Scunthorpe steelworks whilst capacity utilization was over [REDACTED] per cent in FY10 and FY11 for the Port Talbot steelworks before dropping to [REDACTED] per cent in FY12. We note that the Teesside steelworks was closed for a large part of the period, and therefore we placed little weight on its recent capacity utilization figures.

GBS produced and supplied

- Table 3 below shows the total GBS produced and sold over the period from FY07 to FY12.

TABLE 3 **Lafarge Tarmac: GBS operations' GBS production and sales volumes, 2007 to 2012**

	<i>kt</i>					
	2007	2008	2009	2010	2011	2012
GBS production	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
GBS sale	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Surplus/(shortfall)*	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Lafarge Tarmac's response to GGBS questions.

*A surplus over production implies stockpile additions whilst a shortage implied a stockpile reduction.

- Table 4 below shows the GBS that was produced and supplied to Hanson's GGBS plants in FY11 and FY12. We note that Lafarge Tarmac's GBS sales volumes did not fully reconcile with Hanson's GBS purchased volumes.

TABLE 4 GBS supplied to Hanson's GGBS plants, 2011 and 2012

	2011 (kt)				2012 (kt)			
	Port Talbot	Scunthorpe	Teesside	Total	Port Talbot	Scunthorpe	Teesside	Total
<i>GGBS plants</i>								
Port Talbot	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Purfleet	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Scunthorpe	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total sales	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>GBS plants</i>								
Port Talbot	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Purfleet	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Scunthorpe	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total sales	100	100	100	100	100	100	100	100

Source: Hanson's response to GGBS questions.

GGBS production

7. Table 5 below shows Hanson's GGBS production volumes between FY07 and FY12.

TABLE 5 GGBS production volumes, 2007 to 2012

<i>GGBS plant</i>	<i>kt</i>					
	2007	2008	2009	2010	2011	2012
Port Talbot	[X]	[X]	[X]	[X]	[X]	[X]
Purfleet	[X]	[X]	[X]	[X]	[X]	[X]
Scunthorpe	[X]	[X]	[X]	[X]	[X]	[X]
Llanwern*	[X]	[X]	[X]	[X]	[X]	[X]
Teesport†	[X]	[X]	[X]	[X]	[X]	[X]
	[X]	[X]	[X]	[X]	[X]	[X]
	<i>per cent</i>					
Port Talbot	[X]	[X]	[X]	[X]	[X]	[X]
Purfleet	[X]	[X]	[X]	[X]	[X]	[X]
Scunthorpe	[X]	[X]	[X]	[X]	[X]	[X]
Llanwern*	[X]	[X]	[X]	[X]	[X]	[X]
Teesport†	[X]	[X]	[X]	[X]	[X]	[X]
	100	100	100	100	100	100

Source: Hanson's response to GGBS questions.

*Mothballed in 2008.

†Mothballed in August 2010.

8. Based on Hanson's production volumes, Table 6 below shows its active capacity utilization (based on mechanical capacity) over the period FY07 to FY12.

TABLE 6 GGBS plant: active capacity utilization rates, 2007 to 2012

GGBS plant*	per cent					
	2007	2008	2009	2010	2011	2012
Port Talbot	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Purfleet	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Scunthorpe	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Llanwern	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Teesport	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Active capacity†	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Hanson's response to GGBS questions.

*The individual GGBS plant capacity utilization figures were calculated based on Hanson's estimate of GGBS production capacity figures. We note that the capacity figures used in this table are mechanical capacity figures, and therefore the [REDACTED] of the Purfleet GGBS plant referred to by Hanson is not taken into account in this table.

†The total active capacity utilization figures were calculated based on dividing production by the capacity of active GGBS plants. The active capacity utilization figures for 2008 and 2010 are affected by the mothballing of the Llanwern and Teesport GGBS plants respectively. For these years, we have assumed that their respective capacities were active during the whole year.

Note: N/A = not applicable.

The potential competitive constraint from imported GBS

Introduction

1. This supplement to Annex E examines whether, with Lafarge Tarmac remaining as the sole producer of GBS in GB, its ability and incentive to restrict GBS volumes and set higher prices would be constrained by imported GBS.

Our assessment of the competitive constraint from imported GBS

2. We considered whether imported GBS posed a competitive constraint on Lafarge Tarmac's domestically produced GBS.
3. Hanson told us that it recently imported around [REDACTED] of GBS from ArcelorMittal Ghent (Mittal Ghent) in Belgium, and that this was a better quality product than the GBS it purchased from Lafarge Tarmac. It told us that historically it had imported in excess of 100 kt from Mittal Ghent. It added that this allowed for a saving in costs due to decreased grinding time and therefore saved energy costs. Hanson noted that the exclusive agreement with Lafarge Tarmac put a limit on the level of GBS it could purchase from other sources (unless Lafarge Tarmac was unable to provide suitable material in which case there were no limits) which Hanson considered was natural given the requirement of the steel industry for a GGBS supplier to commit to a GBS offtake.¹ Lafarge Tarmac confirmed that under the GBS agreements, Hanson could source up to 200 kt of GBS from third parties (for processing at its Purfleet GGBS plant) and could also source GBS from third parties where Lafarge Tarmac could not supply sufficient GBS of such quality to meet its requirements.
4. Hanson told us that Mittal Ghent had been part of the ArcelorMittal group since 2006, and argued that since ArcelorMittal had been exporting its own GBS into GB for many years in the context of its GBS sales to Hanson, ArcelorMittal was clearly already a long-established exporter of GBS to GB, and therefore would be certain to consider GBS and/or GGBS exports to GB for HCM's use at some stage. It also told us that whilst HCM was not importing any GGBS, ArcelorMittal had unlimited access to GBS and also to GGBS within continental Europe which would affect the market dynamic.²
5. During FY12, Hanson purchased [REDACTED] of GBS from Tarmac (now Lafarge Tarmac), and [REDACTED] from Mittal Ghent. Table 1 below shows the ex-works and delivered prices of GBS to Hanson's Purfleet GGBS plant.

¹ Summary of GGBS response hearing with Hanson, paragraph 16.

² *ibid*, paragraph 17.

TABLE 1 Landed GBS prices (FY12) at Hanson's Purfleet GGBS plant*

From (location)	To (location)	£/t		
		Dry tonnes	Shipping cost (wet basis)	Total landed price
Port Talbot GBS plant*	Purfleet GGBS plant	[REDACTED]	[REDACTED]	[REDACTED]
Mittal Ghent (Belgium)	Purfleet GGBS plant	[REDACTED]	[REDACTED]	[REDACTED]
Teesside GBS plant†	Purfleet GGBS plant	[REDACTED]	[REDACTED]	[REDACTED]

Source: Hanson's response to GGBS questions.

*GBS from Lafarge Tarmac's Port Talbot GBS plant is sent to both Hanson's Port Talbot and Purfleet GGBS plants.

†The Teesside GBS plant is not located near an active GGBS plant and therefore ships its GBS to Hanson's Purfleet GGBS plant.

Note: The Purfleet GGBS plant is not located near a GBS plant and therefore it sources its GBS from Lafarge Tarmac's Port Talbot and Teesside GBS plants, as well as from Mittal Ghent.

- Based on Table 1 above, the FY12 ex-works price for GBS produced at Lafarge Tarmac's Port Talbot and Teesside GBS plants was £[REDACTED] per tonne. This compares with an ex-works price for GBS from Mittal Ghent of £[REDACTED]. Including shipping costs, the landed price of GBS from Lafarge Tarmac's GBS operations was £[REDACTED] from the Port Talbot GBS plant, and £[REDACTED] from the Teesside GBS plant. This compares with a landed price from Mittal Ghent of £[REDACTED].
- Hanson argued that these figures showed that imports of GBS could be cheaper than domestically produced GBS (when shipping costs are taken into account). It added that shipping costs from Belgium to Purfleet were [REDACTED]. It added that by the same reasoning, where a suitable supply source could be found, it would also expect imports of GGBS to be cheaper in the same manner.
- However, we considered that the figures in Table 1 above only demonstrate that during FY12, Hanson's Purfleet GGBS plant was able to source GBS cheaper from imports than from Lafarge Tarmac. We note that the Purfleet GGBS plant is Hanson's only active GGBS plant that is not located close to a GBS plant, and considered that its Port Talbot and Teesport GGBS plants which are located at, or close to, the Port Talbot steelworks and the Teesside steelworks respectively would not be subject to the same shipping costs that are faced by its Purfleet GGBS plant.
- Table 2 below shows the ex-works prices (ie excluding any distribution or shipping costs) of GBS for all of Hanson's GGBS plants, based on Hanson's data.

TABLE 2 Ex-works GBS prices paid by Hanson's GGBS plants, FY07 to FY12

GGBS plant	£					
	2007	2008	2009	2010	2011	2012
Port Talbot*	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Purfleet	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Scunthorpe*	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Llanwern†	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Teesport†	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Hanson's response to GGBS questions.

*The Port Talbot GGBS plant sources all of its GBS from the Port Talbot GBS plant, and the Scunthorpe GGBS plant sources all of its GBS from the Scunthorpe GBS plant.

†Both the Llanwern and Teesport GGBS plants are currently mothballed.

- Based on Table 2 above, we note that the Port Talbot GGBS plant sources all of its GBS from the Port Talbot GBS plant, and the Scunthorpe GGBS plant sources all of

its GBS from the Scunthorpe GBS plant. Given the proximity of Hanson's Port Talbot and Scunthorpe GGBS plants to their respective sources of GBS, ie the Port Talbot and Scunthorpe GBS plants, the ex-works prices of GBS for these two GGBS plants largely represent their respective delivered prices, ie around £[redacted] for the Port Talbot GGBS plant and around £[redacted] for the Scunthorpe GGBS plant.

11. Since we understand that other than the Purfleet GGBS plant, Hanson's other two GGBS plants do not import any GBS, we therefore did not have any data showing landed prices of GBS imports at, or near, the Port Talbot or Scunthorpe GGBS plants. We therefore used Mittal Ghent's ex-works price of GBS to Hanson's Purfleet GGBS plant as a lower bound estimate for the competitive ex-works price that another potential GBS exporter might be able to offer Hanson's Port Talbot or Scunthorpe GGBS plants. Based on Tables 1 and 2 above, the ex-works price per tonne was £[redacted] for GBS from Mittal Ghent, and in relation to GBS from Lafarge Tarmac in 2012, £[redacted] for the Port Talbot GGBS plant and £[redacted] for the Scunthorpe GGBS plant. As mentioned above, given the proximity of the Port Talbot and Scunthorpe GGBS plants to their respective local sources of GBS, we would expect their ex-works prices for GBS to be broadly similar with their respective delivered prices. Therefore, in order for imported GBS to be the same price as the local GBS price (in landed price terms), the shipping costs for the GBS exporter cannot exceed £[redacted] per tonne to the Port Talbot GGBS plant, and £[redacted] per tonne to the Scunthorpe GGBS plant. Since shipping costs (as shown in Table 2 above) were £[redacted] per tonne from Port Talbot to Purfleet, £[redacted] from Belgium to Purfleet, and £[redacted] from Teesside to Purfleet, we concluded that there would be a very significant cost disadvantage faced by GBS imports to the Port Talbot and Scunthorpe GGBS plants.
12. We note that should the GB cement producers decide to use their existing cement plants to grind GBS into GGBS, then they might be able to import GBS on different terms. Our consideration of whether the GB cement producers would be incentivized to grind GBS at their cement plants is set out in Appendix 13.5, Annex B.
13. Therefore, based on our assessment, we did not find any evidence to suggest that the Port Talbot and Scunthorpe GGBS plants would be able to source cheaper imported GBS compared with local sources. Instead, given the proximity of the Port Talbot and Scunthorpe GGBS plants to their respective sources of GBS, we concluded that imported GBS would face a significant shipping penalty compared with domestically produced GBS for these two GGBS plants.

GGBS plants: distribution capabilities

Introduction

1. This supplement to Annex E sets out details of the distribution capabilities of Hanson's GGBS operations.

GGBS plant distribution capabilities

2. Table 1 below shows the GGBS distribution capabilities of Hanson's GGBS plants.

TABLE 1 Modes of transport available to Hanson's GGBS plants

GGBS plant	Road	Ship	Rail
Port Talbot*	Yes	Yes	No
Purfleet†	Yes	Yes	No
Scunthorpe	Yes	No	No
Teesport‡	Yes	Yes	No
Llanwern	Yes	No	No

Source: Question 7 of Hanson's response to GGBS/GBS hearing follow-up questions (9 August 2013).

*Exports GGBS by ship from Hanson's own wharf to Glasgow ([X]), Teignmouth ([X]) and historically to Belfast ([X]). GBS is exported by ship to Purfleet (from Tarmac wharf).

†Imports GBS by ship from Mittal Ghent, Port Talbot and Teesport. Does not export GGBS.

‡Only export facility for GBS by ship direct from plant—facility owned by Lafarge Tarmac.

3. Hanson told us that significant investment would be required at all sites (except Port Talbot) in order to enable exports of GGBS. However, it told us that this would depend on obtaining an international customer base and being able to compete effectively and economically with international producers in their domestic markets. It added that exports from the UK were highly unlikely to succeed, since the UK and Norway alone suffered by far the highest industrial fixed costs of all Europe.
4. Table 2 below shows the GGBS volumes dispatched by each mode of transport.

TABLE 2 GGBS volumes dispatched by each mode of transport

GGBS plant†	kt				per cent			
	Road	Ship	Rail	Total	Road	Ship	Rail	Total
<i>Port Talbot</i>								
2010	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2011	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2012	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
<i>Purfleet*</i>								
2010	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2011	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2012	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
<i>Scunthorpe</i>								
2010	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2011	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2012	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100

Source: Hanson.

*The Purfleet GGBS plant does not have a local GBS plant nearby.

†Hanson's mothballed GGBS plants (Llanwern and Teesport) are not shown.

Note: N/A = not applicable.

5. Table 3 below shows Hanson's deliveries to its GGBS depots.

TABLE 3 Hanson GGBS deliveries to its depots

	<i>kt</i>					
<i>GGBS depot*</i>	2007	2008	2009	2010	2011	2012
Glasgow	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Teesport†	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Teignmouth	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

	<i>per cent</i>					
<i>GGBS depot</i>	2007	2008	2009	2010	2011	2012
Glasgow	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Teesport†	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Teignmouth	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Hanson.

*Excludes Hanson's Belfast GGBS depot, which is outside GB.

†Hanson told us that it no longer used the Teesport GGBS plant site for storage.

6. Based on Table 3 above, in relation to its depots, Hanson told us that:

- (a) nominal capacity at the Glasgow depot was [REDACTED], with a practical working limit of [REDACTED];
- (b) it owned a similar facility within Belfast docks which was currently dormant. It told us that both facilities were adjacent to similar GGBS import facilities operated by competitors. It told us that GGBS was also stored on all three of its cement works and in the Middlesbrough cement depot [REDACTED]; and
- (c) the Teignmouth depot had a [REDACTED] steel silo for loading tankers. It told us that GBS was moved in the building to the pit as required by a loading shovel. It told us that the building was close to the dockside and was filled by a Kovako ship unloader.

Financial information: Hanson's GGBS operations

Introduction

1. This supplement to Annex E contains financial information for each of Hanson's GGBS plants.

GGBS operations: historic profit and loss performance

2. Table 1 below sets out Hanson's GGBS operations' financial performance between FY10 and FY12.

TABLE 1 Financial performance by GGBS plant, 2010 to 2012*

	<i>Port Talbot GGBS plant</i>			<i>Purfleet GGBS plant</i>			<i>Scunthorpe GGBS plant</i>		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
GGBS production (kt)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
GGBS sales volumes (kt):									
Internal sales into RMX	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
External sales (others)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
External sales (Tarmac)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Gross revenues:									
Internal sales into RMX	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
External sales (others)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
External sales (Tarmac)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Net revenues:									
Internal sales into RMX	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
External sales (others)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
External sales (Tarmac)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Variable costs	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Variable profit	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Margin (%)†	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Fixed costs	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
EBITDA	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Margin (%)†	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: Hanson.

*Figures exclude volume, revenue and cost information relating to depots and mothballed GGBS plants.

†Margin on net revenues.

‡The difference between the Port Talbot GGBS plant's production and sales volumes relates to Hanson's GGBS sales from its depots, which are not accounted for under the Port Talbot GGBS plant's figures. Therefore, the sales volumes, revenues and costs of the Port Talbot GGBS plant presented in this table relate only to its sales volumes.

GGBS operations: unit financial performance

3. Table 2 below sets out the unit financial performance by GGBS plant between FY10 and FY12.

TABLE 2 Unit financials by GGBS plant, 2010 to 2012*

£/t

	Port Talbot GGBS plant			Purfleet GGBS plant			Scunthorpe GGBS plant		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
Unit gross revenue:									
Internal sales into RMX	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
External sales (others)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
External sales (Tarmac)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total sales	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Unit net revenue:									
Internal sales into RMX	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
External sales (others)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
External sales (Tarmac)	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Total sales	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Unit variable cost	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Unit variable profit	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
Unit EBITDA	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: Hanson.

*Figures exclude volume, revenue and cost information relating to depots and mothballed GGBS plants.

GGBS operations: cost structure (FY12)

4. Table 3 below sets out the FY12 cost structure by GGBS plant.

TABLE 3 Cost structure by GGBS plant, 2012*

	Port Talbot	Purfleet	Scunthorpe
Variable costs:			
GBS (Tarmac)†	[X]	[X]	[X]
Raw materials (other)†	[X]	[X]	[X]
Electricity	[X]	[X]	[X]
Fuels	[X]	[X]	[X]
Other‡	[X]	[X]	[X]
	100	100	100
Variable costs	[X]	[X]	[X]
Fixed costs (including depreciation)§	[X]	[X]	[X]
	100	100	100

Source: Hanson.

*Figures exclude volume, revenue and cost information relating to depots and mothballed GGBS plants.

†The GBS (Tarmac) item relates to raw materials procured from Tarmac. [X]

‡Other variable cost items include consumables, packaging and third party production services, but excludes inventory change.

§Fixed costs include the costs of depreciation, wages and salaries, repair materials and services, and SG&A (sales, general and administration). Whilst we focused on EBITDA (ie a profit measure before depreciation) to look at financial performance, we considered cost structures by including depreciation as a component within fixed costs.

Scunthorpe GGBS plant: divestiture considerations

Introduction

1. This supplement to Annex E covers submissions from Hanson and Sellafield Ltd (Sellafield) in relation to the divestiture considerations arising from a potential divestiture of the Scunthorpe GGBS plant.
2. In its response to the provisional decision on remedies, Hanson sought to ensure that arrangements were put in place to protect the ongoing viability of the Calumite Ltd JV, and avoid the unintended consequences of its closure, including a provision to ensure the 'essential and continuing ability to service the Sellafield nuclear plant'.

Calumite Ltd

3. We also considered the potential separation issues should the Scunthorpe GGBS plant be divested. In relation to the Scunthorpe GGBS plant, Hanson told us that [REDACTED]. This JV, Calumite Ltd, was 51 per cent owned by Hanson and 49 per cent owned by a US firm, [REDACTED]. Hanson told us that Calumite Ltd was a single-site operation that was co-located at its Scunthorpe GGBS plant site, and sourced GBS from Lafarge Tarmac through its existing GBS agreement, to produce 'Calumite Slag' which was used in the glass manufacturing industry. It added that this application was the only other use for GBS in the UK. It also told us that all costs for [REDACTED].
4. Based on Calumite Ltd's business activity, it was unclear how Hanson's GGBS operation contributed to the JV, other than by way of providing a site for its plant, and securing the JV's supply of GBS under its GBS agreement. If the Scunthorpe GGBS plant was to be divested, we would propose the inclusion of a provision that permitted the Calumite Ltd JV to continue to operate on the Scunthorpe GGBS plant site.

Sellafield Ltd

5. We set out below the views of Sellafield concerning the impact of a divestiture of the Scunthorpe GGBS plant on its business.
6. Sellafield is a company which is owned and managed by Nuclear Management Partners on behalf of the Nuclear Decommissioning Authority (NDA).¹ Sellafield is responsible for delivering decommissioning, reprocessing and nuclear waste management activities at the Sellafield site on behalf of the NDA.
7. Sellafield told us that it used 'cement powders' in its nuclear waste encapsulation process at the Sellafield nuclear site in Cumbria and that these 'cement powders' were also used by a 'number of other nuclear sites in the UK'. It explained that the plants and processes managed and operated by Sellafield were ultimately owned by the NDA. It told us that these 'cement powders' (which we refer to as the Sellafield blend) were produced by blending 'industry standard Scunthorpe GGBS' with Calumite, which it described as a 'coarser GBS product' produced from BFS from the

¹ The NDA is a non-departmental public body set up under the Energy Act 2004 which is responsible for (among others) decommissioning and cleaning up civil nuclear facilities, and reports to DECC and to Scottish Ministers (for some aspects of its functions in Scotland).

Scunthorpe steelworks. [REDACTED] Sellafield told us that the GGBS and GBS (both from the relevant sites in Scunthorpe) used in its Sellafield blend were subject to 'rigorous qualification testing over several months' to demonstrate its 'suitability for use as an encapsulation grade product'. It added that not every BFS was suitable for its Sellafield blend, and that it required its suppliers to demonstrate that they operated to 'various minimum standards in addition to their legal obligations'. Given the requirements on Sellafield's suppliers, Sellafield told us that there was no guarantee that a 'new supplier' in respect of its required GGBS or GBS would be able to meet these requirements.²

8. Sellafield told us that its main concern was the 'potential increased complexity for the supply of a high risk product [ie Sellafield blend] that supports encapsulation processes at the Sellafield site'. It told us that compared with the 'construction industry', Sellafield was a 'very low volume user of GGBS' and that it was concerned that 'any increased complexity of the supply arrangements' may result in price increases (at the least) with the potential that suppliers might reach a decision not to supply Sellafield 'on commercial grounds'. It explained that any 'prolonged disruption due to unavailability of suitable GGBS' on its Sellafield encapsulation plants would have an impact on the [REDACTED] at the Sellafield site, and [REDACTED]. In addition to the above concern, Sellafield set out a number of other concerns and risks:³

- (a) The new owner might not operate the Scunthorpe GGBS plant in the same manner as Hanson, 'varying or permanently changing the quality, particle size distribution or other key parameters of the GGBS'. It added that this may lead to the GGBS failing to meet its technical specification, which may not be possible to compensate for through blending, thereby requiring Sellafield to search for a new supplier of GGBS to blend with Calumite, and 'likely' resulting in a 'number of severe financial and logistical problems'.
- (b) The possibility that Sellafield would have to enter into separate agreements for the supply of GGBS, and the supply of Calumite, the blending of the two products, and the storage and supply of the Sellafield blend. It added that this would introduce a risk that one or more parties (eg Sellafield, Hanson and the new owner of the Scunthorpe GGBS plant) would be unwilling to support such an agreements for its 'specialist, low volume, niche market product'.
- (c) A risk that the new owner of the Scunthorpe GGBS plant might not wish to supply Hanson with GGBS for blending at Nuneaton.
- (d) A risk that the 'close' cooperation required between Hanson and the new owner of the Scunthorpe GGBS plant to produce, store and supply the Sellafield blend 'may be deemed to contravene the divestment rules on competitor collaboration'.
- (e) Uncertainty as to which of the storage silos at the Scunthorpe GGBS plant site would be divested and how this would affect the storage of Calumite and the Sellafield blend.
- (f) A risk that the new owner of the Scunthorpe GGBS plant would not be able to meet the NDA's requirements on its suppliers and its own requirements, eg compliance with ISO (International Organization for Standardization) requirements.

² Sellafield response to provisional decision on remedies.

³ *ibid.*

Analysis of mothballed GGBS plants as a basis for divestiture

Introduction

1. This supplement to Annex E sets out our consideration of the evidence relating to the suitability of Hanson's two mothballed GGBS plants as a basis for divestiture under our GGBS remedies.

Our assessment

2. The Teesport and Llanwern GGBS plants are currently mothballed. In relation to these two GGBS plants:
 - (a) Hanson told us that it had to date sought to maintain the Teesport GGBS plant to retain the option of reopening it at some point in future. It also told us that whilst the Teesport GGBS plant had been mothballed since 2010, it could be fully operational again in around [REDACTED] months.
 - (b) [REDACTED] the Llanwern GGBS plant has remained mothballed since the permanent closure of the Llanwern steelworks back in 2002, and could possibly be reactivated, Hanson told us that its Llanwern GGBS plant was co-located on Tata Steel's land, [REDACTED].
3. We sought confirmation from Tata Steel of its intentions and development plans for its land on which Hanson's Teesport and Llanwern GGBS plants were located:
 - (a) In relation to its land at Teesside (the site of the Teesport GGBS plant), Tata Steel told us that [REDACTED].
 - (b) In relation to its land at Llanwern (the site of the Llanwern GGBS plant), Tata Steel told us that [REDACTED].
4. Based on Tata Steel's views, we considered that we should also take into account the mothballed GGBS plants, in particular given its willingness to renew their respective leases subject to commercial terms. In relation to each of Hanson's two mothballed GGBS plants:
 - (a) We noted that the Teesport GGBS plant has GGBS production capacity of around [REDACTED], and therefore could absorb a significant proportion of the [REDACTED] of GGBS equivalent volumes produced by the Teesside GBS plant. The fact that the Teesport GGBS plant is currently mothballed increases the complexity of a divestiture based on the Teesport GGBS plant. However, we noted that the option of reopening the Teesport GGBS plant may be attractive to Hanson or an acquirer if steel production at the Teesside steelworks were to increase or if the owner of the Purfleet GGBS plant decided to switch to other sources of GBS.
 - (b) We did not consider the Llanwern GGBS plant to be a suitable basis for divestiture on the basis that similar to the Purfleet GGBS plant, it does not have a co-located supply of GBS, ie the Llanwern steelworks was closed in 2002. Instead, the Llanwern GGBS plant would likely source GBS from the Port Talbot GBS plant, where the Port Talbot GBS plant was generating a surplus, or from other GBS producers. However, we considered that once reactivated these GBS supply issues would make the Llanwern GGBS plant vulnerable as a viable and

effective GGBS producer on a stand-alone basis, and therefore would likely be unattractive to potential purchasers. Instead, the fact that the Port Talbot, Scunthorpe and potentially the Teesport GGBS plants, each have a co-located source of GBS, would make them more attractive as a divestiture when compared with the Llanwern GGBS plant.

Estimates of the size of the GBS stockpile

Introduction

1. This annex sets out the views of Lafarge Tarmac and Hanson in relation to the estimated size of the GBS stockpile.

Lafarge Tarmac: views on GBS stockpile

2. Lafarge Tarmac told us that its latest estimate for the size of its GBS stockpile as at the end of FY13 was around [X] Mt, but noted that historic stockpiles were unlikely to be indicative of stockpiles going forward.
3. Lafarge Tarmac told us that at the Teesside steelworks, SSI had recently invested in its steelworks to increase iron production to around 3.5 Mt. It estimated that based on typical slag production rates of around 25 to 30 per cent, and granulation rates of 70 to 80 per cent, this would give an annual GBS production at the Teesside steelworks alone of around 0.6 to 0.8 Mt a year. It told us that this contrasted with Hanson's off-take from the Teesside GBS plant of less than 0.2 Mt a year. Accordingly, it argued that there would be a build-up of stock of around 0.4 to 0.6 Mt a year at this site alone going forward. It added that there was also considerable excess production of GBS, albeit at lower levels, at both the Port Talbot and Scunthorpe GBS plants, as a result of similar investments by the steelworks.
4. Lafarge Tarmac considered that there would be significant levels of excess GBS production in the future, generating up to around 1 Mt going forward (equivalent to a large cement plant).
5. Lafarge Tarmac appeared to suggest that based on an independent study conducted in Germany,¹ GBS products could be stored for long periods of time (five years in the study). It added, however, that GBS degraded when left in stock over time, and argued that if the steel producers were to acquire the GBS plants (as it had suggested in its response to the Remedies Notice), they would be incentivized to sell all fresh stocks of GBS arising.
6. We asked Lafarge Tarmac to provide us with the historic levels of its GBS stockpiles. This is set out in Table 1 below.

¹ Study conducted by the German Institut für Baustoff-Forschung (Institute for Building Materials Research).

TABLE 1 Lafarge Tarmac analysis of GBS stockpile

GBS plant	<i>kt</i>				
	2008	2009	2010	2011	2012
Port Talbot % available for grinding into GGBS	[X]	[X]	[X]	[X]	[X]
Scunthorpe % available for grinding into GGBS	[X]	[X]	[X]	[X]	[X]
Teesside (pellites)* % available for grinding into GGBS	[X]	[X]	[X]	[X]	[X]
Teesside (GBS) % available for grinding into GGBS	[X]	[X]	[X]	[X]	[X]

Source: Lafarge Tarmac's response to GGBS questions.

*Pellites can be ground into GGBS.

7. Based on Table 1 above, the GBS stockpile as at the end of FY12 was [less than 1 Mt]. As Hanson mentions below, an earlier estimate by Lafarge Tarmac of the stockpile was far higher at between 1 and 1.5 Mt. We note that Lafarge Tarmac subsequently corrected its initial estimate from 1 to 1.5 Mt, down to [less than 1] Mt.

Hanson: views on GBS stockpile

8. Hanson told us that Lafarge Tarmac's estimates of the GBS stockpile was 'vastly inflated', and that much of the GBS stockpile that did exist, was 'difficult to use' for GGBS production. It added that both the age and quality of GBS varied widely between plants, and where the GBS stockpiled or produced was not of sufficient quality or was old, it must be blended with 'fresher' and higher quality GBS before it could be used in GGBS production. Hanson told us that it controlled the process of blending this 'variable' GBS through the use of a technical laboratory that measured the quality of the GBS and the end quality of GGBS mix it produced. It considered that much of the low-quality GBS was not immediately available as it could only be used in limited quantities and was dependent on the production of more high-quality GBS.
9. Hanson told us that whilst Lafarge Tarmac quoted that 1.5 Mt of GBS was stockpiled, its own figure of suitable material that could go into its GGBS plants was much less at an absolute maximum of around [less than 1] Mt, but added that this figure was likely to be much lower at [X] Mt due to age and quality issues. It told us that Lafarge Tarmac's estimates of the stockpile level depended on the inclusion of air-cooled material, which was not cementitious in any way and could not be converted to GGBS.² It added that the quality of the stockpiled GBS varied between plants and degraded over time. Hanson told us that it could only use this lower quality GBS in low quantities, blended with higher quality GBS to produce the necessary standard for its customers. It told us that it imported higher quality GBS from abroad to produce blended GGBS that satisfied technical specifications.³
10. Hanson told us that it was not possible for it to be restricting supply to the market, and that the current existence of a 'small GBS stockpile' was due to reduced demand for GGBS in comparison with iron and steel production.⁴ It noted that this dynamic could quickly change in future, in particular given the risks faced by the steel industry.

² Summary of GGBS response hearing with Hanson, paragraph 23.

³ ibid, paragraph 23.

⁴ ibid, paragraph 23.

It believed that it was producing and distributing as much GGBS as was currently being demanded by the market and for the most recent full year had used nearly all the GBS that had been produced in 2012.⁵

11. Hanson provided us with its analysis to demonstrate that current GBS production was insufficient to meet current GGBS demand, which necessitated pre-existing GBS stocks to be run down. This is set out in Table 2 below.

TABLE 2 Hanson analysis of GBS production and GGBS demand

kt

<i>GBS plant</i>	<i>FY12 GBS production*</i>	<i>GGBS from FY12 GBS production only†</i>	<i>FY12 GGBS sold ex GBS plant‡</i>	<i>GGBS surplus/(shortage) from FY12 GBS production</i>
Port Talbot	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Scunthorpe	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Teesside§	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Hanson's response to GGBS questions.

*GBS volumes produced and made available by a GBS plant.

†GGBS production from GBS produced in FY12 only based on Hanson's assumption that GGBS production decreases GBS tonnage by a factor of [REDACTED] per cent.

‡GGBS sold ex-GBS plant means the GGBS that was produced using GBS produced from the GBS plant concerned. For example, the figure of [REDACTED] for the Port Talbot GBS plant means that [REDACTED] of GGBS was produced in FY12 using only GBS produced by the Port Talbot GBS plant (regardless of whether the GBS was produced in FY12 or prior to FY12).

§Hanson told us that the Teesside GBS plant also made available some [REDACTED] of pelletized slag in FY12, although it told us that this was no longer processed by Hanson.

12. Based on Table 2 above, Hanson told us that in FY12:

- (a) The Port Talbot GBS plant produced [REDACTED] of GBS, which equated to around [REDACTED] of GGBS. However, total GGBS sold from GBS produced at the Port Talbot GBS plant was [REDACTED] in FY12, which resulted in a GGBS shortage from FY12 GBS production of [REDACTED].
- (b) The Scunthorpe GBS plant produced [REDACTED] of GBS, equivalent to around [REDACTED] of GGBS. However, [REDACTED] of GGBS was produced and sold by Hanson using GBS produced by the Scunthorpe GBS plant. This resulted in a GGBS shortage from FY12 GBS production of [REDACTED].
- (c) The Teesside GBS plant produced [REDACTED] of GBS, equivalent to around [REDACTED] of GGBS. Hanson sold around [REDACTED] of GGBS using GBS from the Teesside GBS plant, which resulted in a 'hypothetical' (as the GGBS was not produced) GGBS surplus from FY12 GBS production of [REDACTED]. Hanson told us that [REDACTED].

13. Hanson argued that during FY12 there were shortfalls of GBS production at Port Talbot and Scunthorpe, which it had to meet by utilizing pre-existing stockpiles. It told us that there was no surplus capacity in the 'GGBS industry' and that for the most recent full year (FY12), Hanson's GGBS sales of [REDACTED] were slightly higher than the effective GGBS production capacity of [REDACTED] (based on GBS availability), and therefore was reliant on both imports from Mittal Ghent and the 'usable tonnage' within the pre-existing GBS stockpile.

⁵ *ibid*, paragraph 23.

GBS plants: distribution capabilities and financial information

Introduction

1. This annex sets out details of the distribution capabilities and financial information of Lafarge Tarmac's GBS operations.

GBS plants' distribution capabilities

2. Table 1 below shows that each of Lafarge Tarmac's GBS plants can use rail, road and ships to distribute its GBS.

TABLE 1 Modes of transport available to Lafarge Tarmac's GBS plants*

GBS plant	Road	Ship	Rail
Port Talbot	Yes	Yes (onsite)	Yes (onsite)
Scunthorpe	Yes	Yes (in vicinity)	Yes (onsite)
Teesside	Yes	Yes (in vicinity)	Yes (in vicinity)

Source: Question 2 of Lafarge Tarmac response to GBS information request (8 August 2013).

*This table shows the modes of transport available.

3. For each of Lafarge Tarmac's GBS plants, Table 2 below shows the volumes of GBS dispatched by each mode of transport.

TABLE 2 GBS volumes dispatched* by each mode of transport

GBS plant	kt				per cent			
	Road	Ship	Rail	Total	Road	Ship	Rail	Total
<i>Port Talbot</i>								
2010	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2011	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2012	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
<i>Scunthorpe</i>								
2010	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2011	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2012	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
<i>Teesside</i>								
2010	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2011	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100
2012	[X]	[X]	[X]	[X]	[X]	[X]	[X]	100

Source: Question 2 of Lafarge Tarmac response to GBS information request, 8 August 2013.

*GBS volumes dispatched may not necessarily equate to GBS volumes produced in that year.

4. Table 3 below shows the volumes of GBS dispatched by each GBS plant according to destination.

TABLE 3 GBS volumes dispatched by each GBS plant according to each GGBS plant

By GGBS plant†	kt								
	Port Talbot GBS			Scunthorpe GBS			Teesside GBS*		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
Purfleet GGBS plant	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Port Talbot GGBS plant	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Scunthorpe GGBS plant	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Lafarge Tarmac.

*Lafarge Tarmac told us that the GBS produced at its Teesside GBS plant was first sold internally to its subsidiary Cambrian Stone Ltd, and then sold on to Hanson.

Distribution capabilities of the GBS plants

5. Based on Tables 2 and 3 above, in relation to the distribution capabilities of each GBS plant:
 - (a) The Port Talbot GBS plant had access to rail, sea and road transport, and these distribution facilities were available onsite. Lafarge Tarmac told us that its Port Talbot GBS plant was currently distributing GBS by road to Hanson’s Port Talbot GGBS plant and by ship to Hanson’s Purfleet GGBS plant, as well as to [REDACTED].
 - (b) The Scunthorpe GBS plant had onsite facilities to transport GBS by rail and road, but was also within reach of facilities to transport GBS by sea. Lafarge Tarmac told us that all of its GBS volumes from the Scunthorpe GBS plant were currently being transported by road to Hanson’s Scunthorpe GGBS plant. It added that the GBS produced was moved 1 km by road to Hanson’s GGBS plant or stockyard.
 - (c) The Teesside GBS plant only had onsite facilities to transport GBS by road, but it was within reach of offsite facilities to transport GBS by rail and sea. Lafarge Tarmac told us that it was currently using a third party’s slag jetty around 5 miles away from its site in order to ship its GBS to Hanson’s Purfleet GGBS plant. It added that whilst there was an onsite jetty, it was in need of major repairs. SSI told us that whilst Lafarge Tarmac’s GBS operations did not have a direct rail connection, it could consider offering its steelworks’ rail connection for use by the GBS plant.¹
6. We noted that rail transport was not used by any of the GBS plants, notwithstanding the availability of facilities nearby to distribute GBS by rail, in particular at the Port Talbot GBS plant where such facilities are available onsite. However, the co-location of the GBS and GGBS plants at the Port Talbot and Scunthorpe steelworks meant that GBS was primarily transported by road to the co-located GGBS plant. Where GBS is distributed over longer distances, this arises predominantly because the Purfleet GGBS plant does not have a co-located GBS plant, and because the Teesside GBS plant does not have a co-located GGBS plant (since the Teesport GGBS plant is currently mothballed).
7. Whilst Hanson told us that GGBS was always a blended material, eg all GGBS produced by the Purfleet GGBS plant was a ‘carefully managed chemical blend’ between the three GBS materials produced by Mittal Ghent (ArcelorMittal), and the Port Talbot and Teesside works. We noted that this blending between different GBS

¹ SSI response hearing summary, paragraph 34.

sources did not appear to take place at either Hanson's Port Talbot or Scunthorpe GGBS plants. However, Hanson told us that the GGBS produced at the Port Talbot and Scunthorpe GGBS plants was 'generally always a blended product', although the chemical blends at those two sites involved blending between different GBS materials from each respective site, and that the blend and its age and chemical constitution had to be carefully managed to ensure the due cementitious reactivity and properties. It added that if there was an issue in the future with the quality at these GGBS plants, Hanson would then have to consider blending further between sites and sources.

8. We considered that distribution capabilities were more relevant to some GBS plants than for others—eg we concluded earlier that there was effectively a 'captive supply chain' between the GBS and GGBS plants at the Scunthorpe steelworks. In this case, distribution capabilities are less of a relevant consideration than for the Port Talbot GBS plant, where GBS production exceeds the GBS requirement of its co-located GGBS plant. Distribution capabilities are perhaps most important for the Teesside GBS plant, which does not have an active co-located GGBS plant, and therefore its GBS volumes would need to travel further for processing. However, we note that other than road transport, the Teesside GBS plant does not have onsite facilities to transport its GBS by rail or sea, eg as mentioned above, in order to ship its GBS to the Purfleet GGBS plant, GBS needed to be transported for 5 miles by road to the jetty.
9. We concluded that in relation to the three GBS plants, the Port Talbot GBS plant had the greatest choice of onsite distribution facilities, the Scunthorpe plant had the least requirement for such facilities, whilst the Teesside GBS plant lacked the onsite distribution capabilities that might normally be expected given that it requires all of its volumes to be transported offsite.

GBS operations: historic profit and loss performance

10. Table 4 below sets out Lafarge Tarmac's GBS operations' financial performance between FY10 and FY12.

TABLE 4 Financial performance by GBS operation, 2010 to 2012*

£ million

	Port Talbot GBS plant			Scunthorpe GBS plant			Teesside GBS plant		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
GBS sales volumes (kt):									
Hanson (for GGBS)†	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
[x] (for GGBS)‡	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Other (not for GGBS)§	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Gross revenues:									
Hanson (for GGBS)	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
O'Brien (for GGBS)	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Other (not for GGBS)	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Net revenues:									
Hanson (for GGBS)	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
[x] (for GGBS)	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Other (not for GGBS)	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Variable costs	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Variable profit	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Margin (%)¶	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Fixed costs	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
EBITDA	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Margin (%)¶	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]

Source: Lafarge Tarmac.

*Figures exclude volume, revenue and cost information relating to depots and mothballed GBS plants.

†Sales of GBS to Hanson to grind into GGBS.

‡Sales of GBS to [x] (Ireland) to grind into GGBS.

§Sales of GBS to other third parties in the UK, but not to grind into GGBS.

¶Margin on net revenues.

GBS operations: cost structure (FY12)

11. Table 5 below sets out the FY12 cost structure by GBS operation.

TABLE 5 Cost structure by GBS plant, 2012*

	per cent		
	Port Talbot	Scunthorpe	Teesside
Variable costs:			
BFS purchases	[x]	[x]	[x]
Energy	[x]	[x]	[x]
Other†	[x]	[x]	[x]
	100	100	100
Variable costs	[x]	[x]	[x]
Fixed costs (incl depreciation)‡	[x]	[x]	[x]
	100	100	100

Source: Lafarge Tarmac.

*Figures exclude volume, revenue and cost information relating to depots and mothballed GBS plants.

†'Other' variable cost items include the costs of other materials, internal logistics, contract crushing, and load and haul.

‡Fixed costs include (among others) the costs of depreciation, wages and salaries, repairs and maintenance, and centrally attributable support functions, but exclude 'stock movement'. Whilst we focused on EBITDA (ie a profit measure before depreciation) to look at financial performance, we considered cost structures by including depreciation as a component within fixed costs.

Background on the UK steel market

Introduction

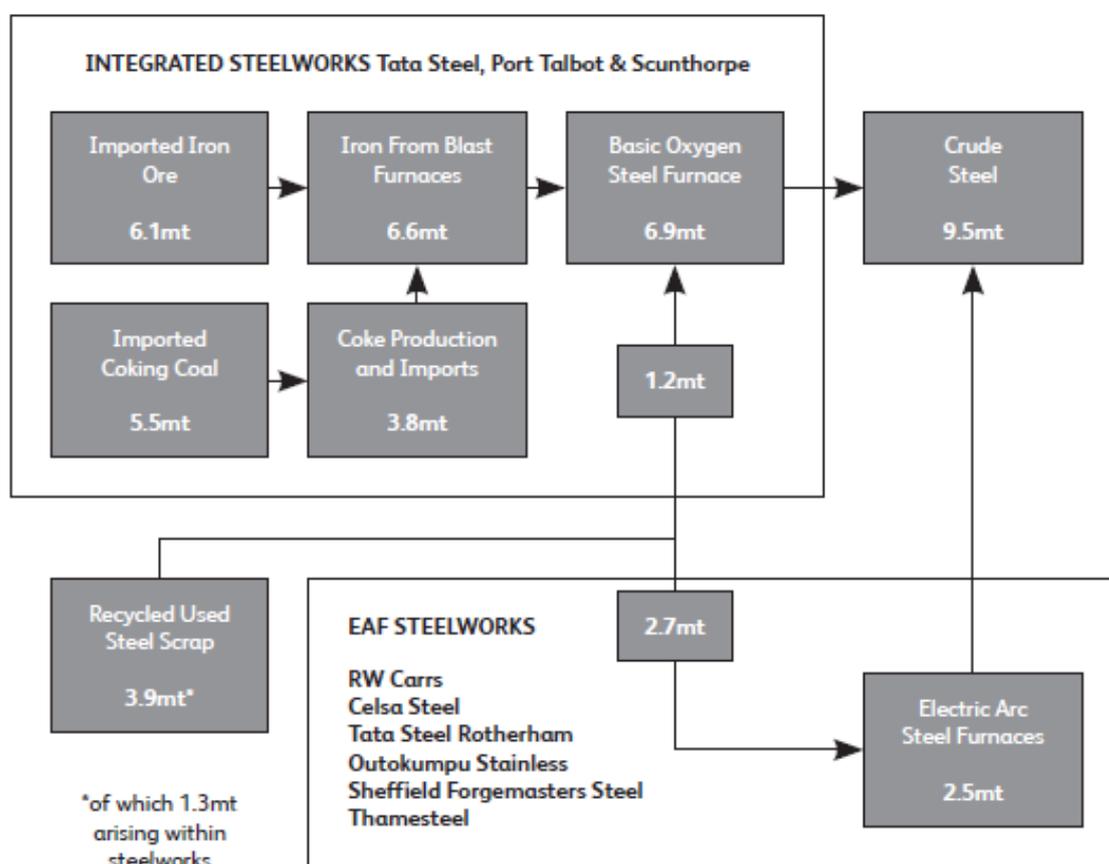
1. This annex contains information concerning the UK steel market.

UK steelmaking

2. Figure 1 below shows an overview of the steelmaking process, and where the three integrated steelworks fit into the overall UK steel market.

FIGURE 1

UK steelmaking (based on 2011 production figures)



Source: UK Steel, 'Key Statistics 2012' (EEF manufacturers association) and the ISSB (International Steel Statistics Bureau).

Note: The Teesside works is not shown in this diagram as it was not in operation during 2011.

3. Based on Figure 1 above, the iron blast furnace from where BFS is produced as a waste by-product forms part of the integrated steelworks' production process. In FY11, there were two integrated steelworks, the Port Talbot works and the Scunthorpe works, both of which were, and are still, owned by Tata Steel. Whilst the Teesside works is also an integrated steelworks, it was closed during the whole of 2011, and therefore does not appear in the diagram above. UK crude steel production was 9.5 Mt in 2011, of which the integrated steelworks produced 6.9 Mt (around 73 per

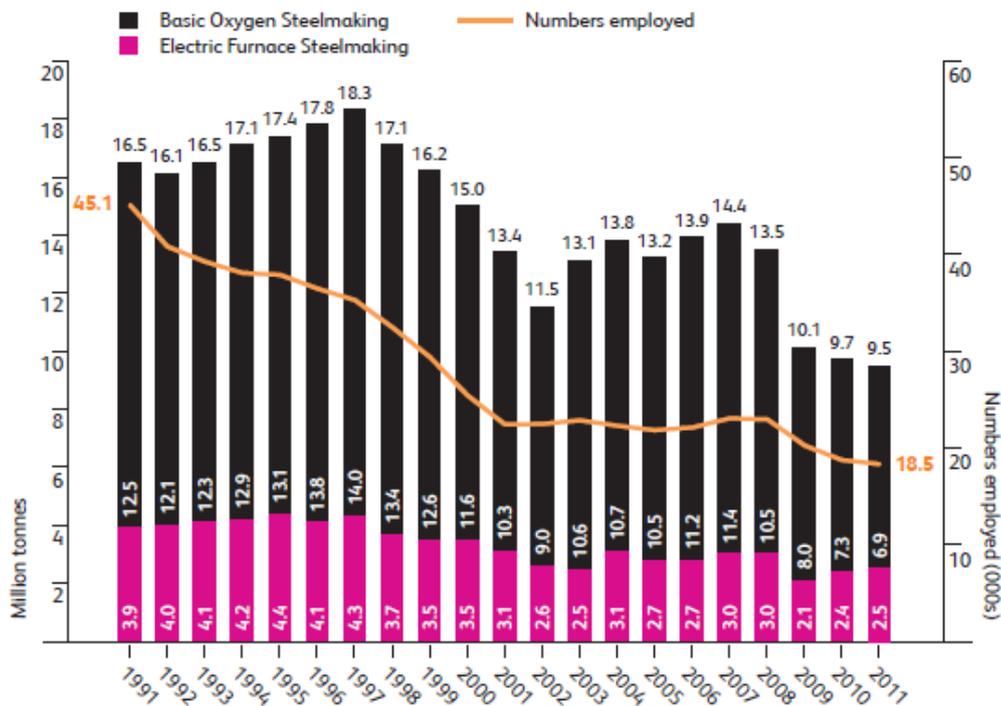
cent of UK crude steel production), whilst the Electric Arc Steel Furnace (EAF) steelworks produced 2.5 Mt (around 27 per cent). The relative trends in UK crude steel production between the integrated steelworks and the EAF steelworks are shown in Figure 2 below.

UK steel production

4. Figure 2 below shows annual crude steel production in the UK (and the numbers employed) between 1999 and 2011. It also shows the split of UK production between the integrated steelworks ('Basic Oxygen Steelmaking' in the diagram) and the EAF steelworks ('Electric Furnace Steelmaking' in the diagram). We note that Tata Steel's Port Talbot works and Scunthorpe works, and SSI's Teesside works are part of the former, and are all integrated steelworks.

FIGURE 2

UK steel production and employment, 1991 to 2011



Source: UK Steel, 'Key Statistics 2012' (EEF manufacturers association) and the ISSB (International Steel Statistics Bureau).

Note: BFS comes from 'Basic Oxygen' steelmaking.

5. Figure 2 above shows that over the period between 1991 and 2011, UK crude steel production reached its lowest production level in 2011 at 9.5 Mt, down from a high over the period of 18.3 Mt back in 1997. Whilst total UK production remained broadly stable between 2003 and 2008, when annual production ranged from 13 to 14 Mt, it dropped sharply in 2009, when production fell from 13.5 Mt in 2008 to 10.1 Mt in 2009. Since then, annual production has remained broadly at around 10 Mt, albeit declining slightly year on year. We note that the relatively large falls in production in 2002 and 2009 can partly be explained by the closure of the Llanwern works in 2002 and the reduced production at the Teesside works in 2009 before its full closure in 2010.

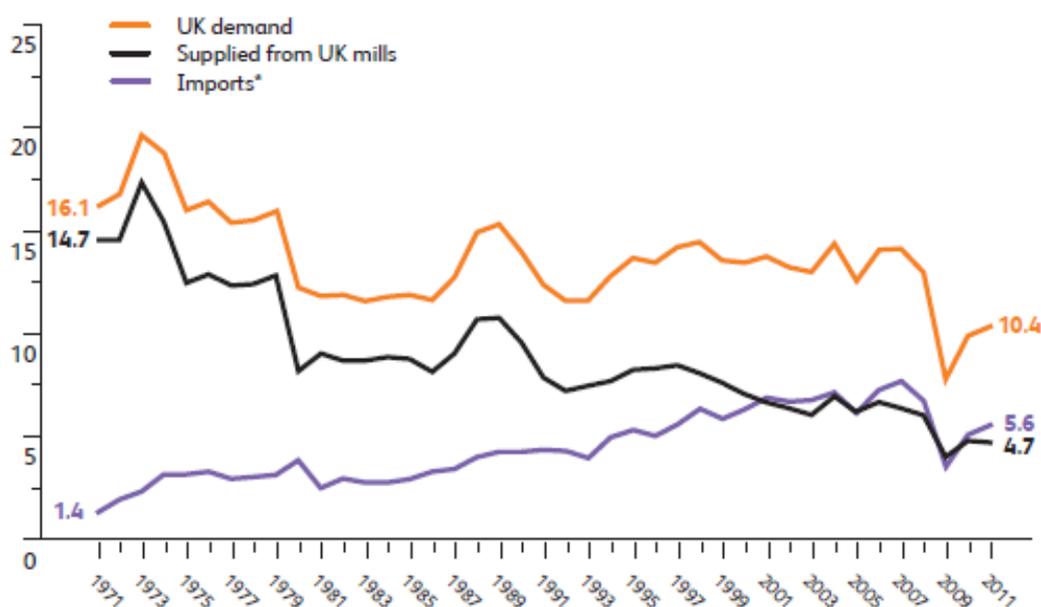
6. Based on Figure 2 above, over the period 1991 to 2011, UK production accounted for by the integrated steelworks declined in absolute terms from 12.5 Mt (or 76 per cent of total production) in 1991 to 6.9 Mt (or 73 per cent) in 2011. The figures suggest that UK production will continue to be predominantly driven by production from the integrated steelworks.
7. In relation to 2012 production figures, according to the source, ISSB, following the lowest annual crude steel production figure since the 1930s in 2011, the total in 2012 was fractionally higher, which included the contribution from the Teesside works, which reopened in April 2012 to produce steel for the export market. The ISSB went on to state that without the contribution of the Teesside plant, crude steel production in 2012 would have hit a 'new record low'.¹

UK steel demand

8. Figure 3 below shows the UK demand for steel mill products between 1971 and 2011.

FIGURE 3

UK steel mill demand, 1971 to 2011 (Mt)



Source: UK Steel, 'Key Statistics 2012' (EEF manufacturers association) and the ISSB (International Steel Statistics Bureau).

Note: Excludes any imports made by UK steel producers.

9. Figure 3 above shows that since 1971, UK annual demand for steel declined by 35 per cent from around 16 to 10 Mt in 2011. During this period, there was a significant change in how UK demand was met: in 1971, 91 per cent of UK demand was supplied by UK production and 9 per cent by imports. By 2011, these shares changed to 45 and 54 per cent respectively.

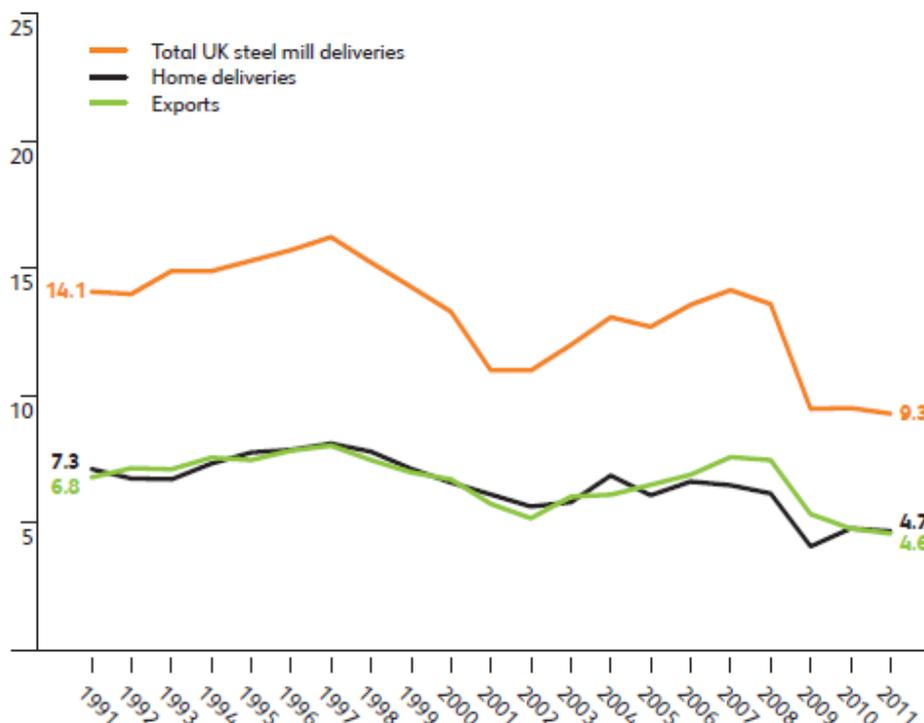
¹ ISSB Ltd website (International Steel Statistics Bureau)—www.issb.co.uk.

UK domestic and export sales

10. Figure 4 below sets out the proportion of UK steel mill sales sold in the UK and the proportion that was exported over the period 1991 to 2011.

FIGURE 4

UK steel mill home and export deliveries, 1991 to 2011 (Mt)



Source: UK Steel, 'Key Statistics 2012' (EEF manufacturers association) and the ISSB (International Steel Statistics Bureau).

11. Figure 4 above shows that around half of UK steel mill sales went to the domestic market whilst the other half was exported, and that this relative split was broadly maintained over the period 1991 to 2011. We note the relatively similar trends exhibited by both domestic and export sales over the period.
12. According to the ISSB, despite UK import and export levels being relatively high in relation to domestic production and demand levels, the UK was a net exporter of steel over the period 2007 to 2009. It also stated that given that the 'export orientated' Teesside works was mothballed for the majority of 2010, the UK became a 'small' net importer of steel in 2010 with the trend continuing through 2011. It added that the Teesside works, which restarted during 2012, had closed this gap, but the UK still remained a net importer during the year.²

² *ibid.*

Our assessment of remedy options not being taken forward

1. In this appendix, we present our assessment of the remedy options that we have decided not to take forward.
2. We examine each of these remedy options under the following annexes:
 - Annex A: Divestiture of RMX plants by Top 3 cement producers
 - Annex B: Creation of a national cement buying group
 - Annex C: Recommendations on the publication of ETS emissions data
 - Annex D: Divestiture of stand-alone grinding stations
 - Annex E: Information barriers between cement and RMX operations
 - Annex F: Mandatory competitive tendering on cement cross-sales
 - Annex G: Alternative remedies for GBS supply
 - Annex H: Options ruled out in the Remedies Notice

Divestiture of RMX plants by Top 3 cement producers

Description of remedy option

1. In our Remedies Notice, we proposed a remedy option involving the divestiture of RMX plants by one or more of the Top 3 cement producers to independent purchasers.¹ We stated that as part of our consideration of this remedy, we would have regard to the size of the ‘addressable market’ that would result from the implementation of this remedy.²
2. We noted that this RMX plant divestiture remedy represented a separate and different remedy from any RMX plant divestitures required under our cement plant divestiture remedy (see Figure 13.1), both in their respective aims and purpose.

Views of parties

3. Some of the arguments from parties who did not consider this remedy to be effective in addressing the coordination AEC were based on the view that the size of the addressable market was already substantial, and therefore a remedy that increased this market would not be effective. Other arguments centred on the low barriers to entry into RMX production, and on the fact that we had not found an AEC in the RMX markets.
4. Hanson considered that the addressable market was sufficiently large, and that increasing this further would only have a ‘marginal effect’.³ It explained that any new RMX competitor that was created as a result of this remedy would simply be viewed as another customer and would not affect the dynamics of the cement customer base.⁴ It added that any RMX plants that were divested would most likely be purchased by established RMX operators other than the Top 3 cement producers, and given the ‘nature’ of the tendering process, this remedy would be unlikely to have any ‘material effect’ on cement prices.⁵ In relation to the impact of this remedy on reducing cross-sales, it told us that it was now almost completely internally self-supplied in cement.⁶
5. Hanson also suggested that some of its aggregates sites were reliant on vertical integration and told us that if it were to divest any RMX plants, this might also lead to it to close or mothball some of its aggregates sites, as they would lose the stability and structure provided by having vertically integrated aggregates and RMX operations.⁷ It told us that RMX plant divestitures, this time by both Hanson and Cemex, would result in HCM emerging as the ‘undisputed leader’ in RMX, even if HCM did not acquire any of the divested plants. It told us that this could potentially threaten the current competitiveness that existed in the RMX market.⁸
6. Cemex told us that the GB cement producers were already focused on competing for independent customers, and that competition for these customers had not been

¹ Remedies Notice, paragraphs 31–34.

² We defined the ‘addressable market’ as GB cement sales to customers that were independent of the GB cement producers.

³ Hanson response hearing summary, paragraph 26.

⁴ *ibid*, paragraph 27.

⁵ *ibid*, paragraph 22.

⁶ *ibid*, paragraph 29.

⁷ *ibid*, paragraph 23.

⁸ *ibid*, paragraph 24.

affected by the presence of vertically integrated RMX divisions.⁹ It told us that the size of the addressable market was already ‘significant’ and estimated that at around 4.5 Mt, it accounted for around half of all GB cement production.¹⁰ In a further submission, Cemex asserted that the addressable market for independent cement producers was not restricted to supplying fixed RMX plants and noted that ‘in recent years, there has been a drift away from fixed RMX plants to volumetric trucks and precast concrete’. It also did not find that vertical integration or the size of the addressable market acted as a barrier to entry or expansion for cement importers, and that according to our own provisional findings, it appeared that barriers already existed in other forms, eg that importers faced an intrinsic cost disadvantage relative to the GB cement producers.¹¹

7. In relation to the impact of this remedy on reducing cross-sales, Cemex considered that whilst in theory, a reduction in cross-sales might lead to ‘lesser transparency’, the amount of cross-sales had already reduced in recent years, and that [✂].¹² It also told us that in relation to the impact of this remedy on countervailing buyer power, it could require a very large number of RMX plants to a single buyer to increase any countervailing buyer power, but argued that even this would not increase its buyer power as customers purchased at job-site level, and therefore a buyer of a large number of divested plants would not have greater buyer power than what each individual plant currently could achieve on its own.¹³
8. In a later submission, Cemex observed that ‘Hanson notes that where possible it strategically matches its RMX sites to its aggregates sites’ and told us that ‘Cemex follows a similar strategy and any divestment of RMX sites by Cemex would adversely affect its aggregates business’. It also told us that if the CC were to require Cemex and Hanson to reduce their levels of vertical integration by divesting RMX plants, this would have the unintended consequence of making Cemex, Hanson and Lafarge *more* symmetrical. It added that ‘the risks posed by Cemex, Hanson and Lafarge each having a similar level of vertical integration was expressly recognised by the CC in its assessment of the Lafarge/Tarmac merger’.
9. In its response to the provisional decision on remedies, Cemex told us that it ‘strongly’ agreed with the CC’s view in the provisional decision on remedies that a divestiture of stand-alone RMX plants from one of the Top 3 cement producers was not an ‘appropriate remedy’ to address the AEC identified.¹⁴ It reiterated its views that such a remedy would: (a) not reduce barriers to entry; (b) neither increase the size of the addressable materially nor reduce cross-sales unless a ‘large and disproportionate number’ of RMX plants were to be divested; (c) not result in countervailing buyer power; and (d) increase the focus of the Top 3 cement producers on the addressable market.¹⁵ It added that whilst a remedy involving the divestiture of RMX plants ‘may, theoretically, lead to a reduction in transparency’, this reduction in transparency would not be ‘material’ and a ‘significant reduction’ in transparency could not be achieved without the sale of all RMX plants, which Cemex told us would be ‘disproportionate’.¹⁶
10. Lafarge Tarmac argued that whilst the remedy might be workable in theory, there were a number of issues in relation to its implementation. It told us that whilst having

⁹ [Cemex response to Remedies Notice](#), paragraph 2.23.

¹⁰ *ibid*, paragraph 5.28.

¹¹ *ibid*, paragraph 2.23.

¹² *ibid*, paragraph 2.23.

¹³ *ibid*, paragraph 2.23.

¹⁴ [Cemex response to the provisional decision on remedies](#), paragraph 5.2.

¹⁵ *ibid*, paragraph 5.5.

¹⁶ *ibid*, paragraph 5.5.

a larger addressable market would allow for more cement to be sold externally, this might not be achievable given that there were unlikely to be any buyers that would acquire a large number of RMX plants.¹⁷ It added that whilst barriers to entry into RMX production were low and smaller operators could set up local operations, they could not necessarily buy a large number of RMX plants in one go, or have the expertise and nationwide coverage to be able to compete effectively.¹⁸ It also pointed out that its own level of vertical integration was low at around 15 per cent, and that it was much higher in the rest of the market.¹⁹

11. MI told us that given the low barriers to entry into RMX production, there were already a significant number of small independent RMX operators.²⁰ It told us that a divestiture of stand-alone RMX plants might not be an effective remedy in itself and that in any event, it might not be attractive to potential purchasers.²¹ It added that should the remedy be implemented, it would mean that a 'significant' number of RMX plants would have to be divested in order to generate sufficient 'buying power' in relation to cement.²²
12. In relation to the size of the addressable market, Aggregate Industries estimated that around 40 per cent of cement was already sold to independent customers. It told us that whilst it seemed apparent that the Top 3 cement producers had 'sufficient' cement capacity to run their RMX operations, the RMX operations themselves were struggling with profitability.²³ It therefore considered that HCM's entry into the GB cement markets and [X] would [X] be effective in increasing competition in the GB cement markets, and that it was not necessary to divest any RMX plants as part of our package of remedies.²⁴ It added that since the RMX market was already very competitive, if through the implementation of this remedy, a large number of RMX plants led to an 'additional competitive dynamic', then this could lead to the possibility of 'bankruptcies' in the RMX sector.²⁵
13. In relation to the views of the independent operators, some believed that this remedy could be effective, whilst others were uncertain as to its effectiveness or whether it would be beneficial to their business.
14. Titan suggested that the GB cement producers that were required to make the RMX plant divestitures would probably compete against the independent RMX producers in order to make up for their loss of volumes resulting from their divestitures.²⁶ It told us that RMX plant divestitures could potentially have a 'positive effect' on its cement import business depending on where the plants were located, and depending on the number of plants being divested.²⁷ [X]²⁸
15. CRH told us that should this remedy increase the number of independent RMX producers, then in principle this could benefit companies like CRH as it would have more customers to compete for. However, it was unsure as to who would be able to buy enough RMX plants to make this remedy viable.²⁹

¹⁷ [Lafarge Tarmac response hearing summary](#), paragraph 26.

¹⁸ [ibid](#), paragraph 27.

¹⁹ [ibid](#), paragraph 25.

²⁰ [MI and HCM response hearing summary](#), paragraph 29.

²¹ [ibid](#), paragraph 30.

²² [ibid](#), paragraph 28.

²³ [Aggregate Industries response hearing summary](#), paragraph 18.

²⁴ [Aggregate Industries response to Remedies Notice](#), paragraph 3.2.

²⁵ [Aggregate Industries response hearing summary](#), paragraph 18.

²⁶ [Titan response hearing summary](#), paragraph 14.

²⁷ [ibid](#), paragraph 14.

²⁸ [ibid](#), paragraph 15.

²⁹ [CRH response hearing summary](#), paragraph 15.

16. Dragon Alfa (CPV) told us that having more RMX plants under independent ownership might benefit some participants in the market, but that it would not particularly benefit its business, as it tended not to supply the large RMX plants owned by the GB cement producers.³⁰ It considered it unlikely that its import operations would gain additional cement business if a medium-tier independent such as Brett Group or Breedon Aggregates owned more RMX plants, since it believed that they would continue to source cement from the GB cement producers.³¹
17. Breedon Aggregates told us that it would be difficult to predict the impact of this remedy. Whilst it considered that limiting the amount of internal cement sales or cross-sales made by the Top 3 cement producers would likely have the consequence of making them compete harder for external customers,³² it told us that careful consideration would be needed in relation to what level of vertical integration should be targeted. It added that it might be necessary for different producers to have different levels of vertical integration.³³
18. Breedon Aggregates also considered that reducing the level of internal cement sales that the Top 3 cement producers could make, would likely result in the scaling back of their RMX capability, and that this could lead to a more profitable RMX sector, since the price of RMX may currently be suppressed because the major cement players took profit upstream in their cement businesses which made it difficult for independent RMX firms to be profitable.³⁴ Conversely, however, it also considered that this remedy might result in buyers of the divested RMX plants scaling back capacity if they 'discovered that it was a challenging business' and therefore did not 'work hard at keeping their RMX businesses going'.³⁵
19. The OFT told us that RMX plant divestitures would probably have to be at such a level so as to increase the size of the addressable market such that there would be a 'real increase in overall competition' for the supply of cement through encouraging more suppliers to compete for the business and make better use of their plants. Finally, the ISBA told us that it considered a 'break-up of the present level of dominance and vertical integration' would be a 'prerequisite' to open up the 'various construction materials markets'.³⁶
20. In relation to whether there would be any potential interest in acquiring any divested RMX plants, [redacted] expressed an interest, albeit conditional to some extent.
21. Breedon Aggregates told us that RMX production required a lot of overheads and was a high-volume, low-margin business, and that it would only be interested in RMX plants that were situated near its aggregates facilities, [redacted].³⁷
22. Brett Group told us that it would be interested in acquiring a number of divested RMX plants subject to having the necessary management capacity and the location of the plants being divested in relation to its aggregates facilities and the addressable market. [redacted] In this way, it added that its business could purchase cement competitively, and could add value to [redacted] its [redacted] aggregates.³⁸

³⁰ [CPV response hearing summary](#), paragraph 14.

³¹ [ibid](#), paragraph 15.

³² [Breedon Aggregates response hearing summary](#), paragraph 12.

³³ [ibid](#), paragraph 14.

³⁴ [ibid](#), paragraph 12.

³⁵ [ibid](#), paragraph 16.

³⁶ [ISBA response to provisional findings and Remedies Notice](#), p3.

³⁷ [Breedon Aggregates response hearing summary](#), paragraph 15.

³⁸ [Brett Group response hearing summary](#), paragraph 14.

23. Aggregate Industries told us that [REDACTED], and suggested that ideal buyers would be those seeking to operate RMX plants as a stand-alone operation without also operating a cement plant.³⁹
24. Titan told us [REDACTED].⁴⁰ It added that the risk for a cement importer that acquired an RMX business was that, in doing so, it was effectively signalling to its current customers that it was now also a competitor. Therefore, it told us that any potential buyer of RMX plants which also supplied cement would have to evaluate the potential harm that such integration might cause by alienating its existing customers. [REDACTED]⁴¹
25. CRH told us that it was [REDACTED]. It considered that there were low barriers to entry into the RMX market, and in its experience, whenever the RMX market became very profitable, there would be a flood of entrants and the price of RMX and the returns on it would decrease.⁴²
26. Both Dragon Alfa and its ultimate parent company, CPV, [REDACTED].⁴³

Our reasons for not taking the remedy option forward

27. While we have identified vertical integration from cement into downstream operations as being a feature contributing to the coordination AEC, we have decided not to pursue this remedy for the following reasons.
28. First, absent an effective measure that increases the number of cement competitors and/or materially reduces the share of the market held by the coordinating group, a remedy targeted solely at reducing the extent of the vertical integration of one or more of the Top 3 cement producers is unlikely to have a sufficiently disruptive impact on the GB cement markets to remedy the coordination AEC. It would leave the horizontal structure of the GB cement markets and the identity and positions of the key participants largely unchanged. While some aspects of market transparency would be reduced, other important aspects of market transparency would remain including those that derive from intrinsic features of the market and the horizontal structure of the market.
29. We note that evidence of coordination has been observed throughout the period covered by our investigation during which there have been some significant changes in vertical integration, suggesting that coordination in the GB cement markets can be resilient to such changes. Similarly, while cement importers may derive some benefit from having a larger number of independent RMX providers to seek to supply, they would continue to face the cost and other disadvantages that represent their main current barrier to expansion.
30. Secondly, and on balance, since effective measures have been included in our package of remedies that introduce new competitors to the cement and GGBS markets, we did not consider a further divestiture of RMX plants to be necessary in order to achieve a comprehensive solution to the AECs and resulting customer detriment we found (see paragraphs 13.377 and 13.378). Whilst the pattern of vertical integration within the Top 3 cement producers following implementation of our preferred package of remedies might still affect the ability and incentives of GB cement producers to sustain a coordinated outcome, we considered that these effects would be out-

³⁹ [Aggregate Industries response hearing summary](#), paragraph 19.

⁴⁰ [Titan response hearing summary](#), paragraph 16.

⁴¹ [ibid](#), paragraph 17.

⁴² [CRH response hearing summary](#), paragraph 14.

⁴³ [CPV response hearing summary](#), paragraph 16.

weighed by the increased competitive constraint that we would expect from a new and substantial competitor in the GB cement markets and a more competitive GGBS supply chain. Given this, it would be disproportionate to require RMX plant divestitures, over and above those necessary to achieve an effective divestiture of either the Cauldon or Tunstead plant (see Figure 13.1).

31. Thirdly, there are a number of practical challenges associated with the specification of this remedy. These include the specification of an appropriate threshold for the scale of any divestitures and the difficulties that may be encountered in finding suitable purchasers willing to acquire a sufficient number of RMX plants to make a material difference to the level of vertical integration and to market outcomes. While not necessarily insurmountable, these challenges further reduced the attractiveness of this as a remedy option.
32. Based on our assessment above, we concluded that absent the other measures in our package of remedies, a larger independent RMX sector would not sufficiently address either the ability or the incentives of the Top 3 cement producers to sustain a coordinated outcome. Whilst we accepted that there could be potential benefits to competition in the GB cement markets from increasing the size of the addressable market and reducing the level of internal sales among the Top 3 cement producers, we concluded that the impact of our other measures on the susceptibility of the GB cement markets to coordination would be sufficient to remedy the AECs without the need for further intervention.
33. We therefore decided not to implement this remedy option.

Creation of a national cement buying group

Description of remedy option

1. In our Remedies Notice, we proposed a remedy to establish a regional or national cement buying group which would purchase cement on behalf of independent RMX and other concrete producers.⁴⁴ The potential scope of a cement buying group's responsibilities was also set out in our Remedies Notice.⁴⁵
2. We have found that:
 - the limited impact of countervailing buyer power was one of the factors that contributed to the external sustainability of coordination in the GB cement markets;⁴⁶
 - there was some evidence of large customers ([X]) and ([X]) obtaining particularly favourable terms for cement supplies, particularly if they were able credibly to threaten to import large additional quantities of cement instead;⁴⁷ and
 - the evidence suggested that customers who did not switch were not benefiting from the relatively lower prices of those who did.⁴⁸
3. The purpose of this remedy option would have been to replicate the purchasing power of larger cement customers for smaller independent customers and enable them to benefit from the ability to source cement on better terms than might otherwise be the case should they continue with their individual cement procurement arrangements. Therefore, a cement buying group may be able to:
 - provide a sufficient competitive constraint on the coordinating group to undermine any coordination;
 - destabilize any coordination on market shares through increased switching that would increase volatility in market shares, and given the potentially large volumes involved, increase the incentive to deviate from a coordinated outcome; and
 - lower prices through its collective purchasing arrangements and thereby address the customer detriment of higher cement prices.

Views of parties

4. Nearly all parties (both cement suppliers and customers) were opposed to this remedy, and argued a range of different arguments, in particular the competitive advantage that was derived from individual negotiations, and the unintended consequences that might arise from implementing this remedy.
5. In relation to the view that individual procurement of cement was a source of competitive advantage for the participants in the markets downstream from cement

⁴⁴ Remedies Notice, paragraphs 65–70.

⁴⁵ *ibid*, paragraph 68.

⁴⁶ Paragraph 8.287.

⁴⁷ Paragraph 8.284.

⁴⁸ Paragraph 7.181.

production, and perhaps related to this, that RMX producers preferred to operate independently rather than purchase cement collectively:

- Lafarge Tarmac told us that most cement customers believed they could gain competitively by negotiating directly with their cement suppliers, and not be on the same terms as their competitors. In particular, it believed that larger customers would not join a buying group as this would mean that they could not differentiate themselves from their competitors. From its perspective as a cement supplier, it told us that it was working to develop its individual customer relationships and not to be a 'commodity driven company'.⁴⁹
- MI considered that there was no merit in a remedy that established a cement buying group, since competition that took place downstream from cement production (eg RMX) was based on one competitor getting a better cement price than another. It added that if a cement buying group was established, this would stifle downstream competition and potentially increase prices to the customer.⁵⁰ It also told us that larger downstream operators such as producers of pre-cast concrete would more likely be able to purchase cement more cheaply individually than through a cement buying group.⁵¹
- Hanson told us that it believed that cement buying groups could attain a level of purchasing power and that as evidence of this, buying groups already existed and were effective in the packed cement business. However, it added that it was possible that independent RMX producers might not always want to cooperate with each other in order to form a buying group, particularly given that they were competing 'fiercely' locally in order to win business and to seek to differentiate themselves, which could be subdued if they were all paying the same cement prices.⁵²
- Breedon Aggregates told us that it was happy with how it currently purchased cement, and believed that it did not need the leverage that might follow from joining a cement buying group. It therefore considered a cement buying group not to be an attractive proposition for its business. However, it added that a cement buying group might be beneficial for smaller cement customers, in terms of both achieving lower prices and also overcoming credit risk issues. However, it added that small independent customers might not even be paying significantly more for cement than larger customers.⁵³
- Brett Group told us that in order to leverage the best cement prices for its business it took a long-term view in relation to building knowledge, relationships and contacts, and that [redacted].⁵⁴
- Aggregate Industries told us that it was a large consumer of GB-produced cement, which combined with its cement import capacity, gave it leverage. It added that [redacted].⁵⁵
- CRH considered that the 'independent-minded nature' of many independent RMX producers would make it difficult for them to work together.⁵⁶

⁴⁹ Lafarge Tarmac response hearing summary, paragraph 37.

⁵⁰ MI and HCM response hearing summary, paragraph 31.

⁵¹ ibid, paragraph 32.

⁵² Hanson response hearing summary, paragraph 32.

⁵³ Breedon Aggregates response hearing summary, paragraph 17.

⁵⁴ Brett Group response hearing summary, paragraph 15.

⁵⁵ Aggregate Industries response hearing summary, paragraph 20.

⁵⁶ CRH response hearing summary, paragraph 16.

6. Cemex told us the creation of cement buying groups would have some scope to addressing the AEC through the formation of 'large buyers' that could exercise their buyer power to drive down prices and increase the incentives of the GB cement producers to deviate from the 'alleged coordinated agreement'.⁵⁷ It explained how the formation of 'large buyers' would make demand for cement lumpier and how switching by such customers may be sufficiently large to generate 'high one-off gains' from deviating away from the coordinated outcome.⁵⁸ It told us that in order for this remedy not to distort the 'free market',⁵⁹ and to be effective and proportionate, its design should ensure that:⁶⁰
 - there was no requirement for a GB cement producer to sell any minimum cement volumes to any cement buying group;
 - all cement buying group members should be given a choice of purchasing cement outside of their cement buying group arrangements; and
 - there should be no requirement for any GB cement producer to administer or pay for any cement buying groups.
7. Cemex pointed out that a requirement for a GB cement producer to sell a specific proportion of its volumes to a cement buying group would be disproportionate and would interfere with the producer's 'freedom to contract'. The imposition of such a requirement, it argued, would result in a cement buying group holding GB cement producers 'to ransom' in the knowledge that GB cement producers would be required to sell it a certain amount of cement. Cemex told us that this would result in cement being sold below the competitive price.⁶¹ In relation to a requirement for cement buying group members to source all, or some, of their cement requirements through the cement buying group, Cemex told us that it would be disproportionate and 'market distorting' if cement buying group members were not given a choice of buying cement outside its cement buying group arrangements if they wished to do so.⁶²
8. However, Cemex recognized the importance of product specification to some purchasers of bulk cement and cited an example whereby a group of RMX producers might want to purchase a specific type of cement that performed in a certain way. It therefore considered that regional or even 'product-specific' buying groups would be more effective than a single national buying group.⁶³ It also believed that there would be 'technical problems' associated with a cement buying group in that when buying bulk cement, RMX producers would need two to three weeks to test the cement in order to understand its particular qualities and how it might perform with different mixtures.⁶⁴ However, Cemex did not believe that it would be difficult to establish regional buying groups from an administrative perspective once the 'technical difficulties' concerning the product specification of cement had been overcome.⁶⁵
9. Other parties were less convinced than Cemex by the potential effectiveness of this remedy, and cited their concerns in relation to this remedy, which are set out below.

⁵⁷ [Cemex response to Remedies Notice](#), paragraph 4.58.

⁵⁸ *ibid*, paragraph 4.56.

⁵⁹ *ibid*, paragraph 4.53 & footnote 43 to paragraph 4.54.

⁶⁰ *ibid*, paragraph 2.25.

⁶¹ *ibid*, paragraph 5.48.

⁶² *ibid*, paragraph 5.49.

⁶³ [Cemex response hearing summary](#), paragraph 32.

⁶⁴ *ibid*, paragraph 30.

⁶⁵ *ibid*, paragraph 33.

10. Hanson told us that whilst buying groups could attain a level of purchasing power, and indeed they existed for packed cement, there were a number of potential ‘complications’ for a buying group on behalf of RMX producers, which largely revolved around the RMX producers’ need for a ‘variety of materials’, which could sometimes be quite specific and dependent on the nature of the job, as well as the location and structure of their silo capacity. It added that further complications would arise because whilst packed cement was a final product, similar to a commodity, bulk cement was a raw material that was an input into the production of a final product.⁶⁶
11. Lafarge Tarmac told us that buying groups already existed for packed cement purchases, eg the ‘National Buying Group’. It argued that if there was a benefit of a buying group, then there was no barrier preventing independent bulk cement customers from setting one up on their own.⁶⁷
12. Aggregate Industries told us that it could not see the benefits of creating a cement buying group, and believed that the existing tendering arrangements allowed for more ‘bespoke outcomes’ than would otherwise be the case under an ‘auction system’ through the cement buying groups. It explained that cement was not a commodity and that different types of cement had different applications. It told us that the current tendering process was more efficient because customers could specify precisely the exact product they wanted and what they intended to use it for. It added that consistency, availability and security of supply were also important factors for customers. It therefore considered that if cement buying groups were beneficial for cement customers, then they would have already been formed.⁶⁸
13. Aggregate Industries also told us that this remedy would not be effective at remedying our AEC since buyer power was derived from the availability of a range of ‘outside options’ to customers, and there was little reason to believe that a cement buying group would lead to lower prices given that the number of ‘distinct suppliers’ active in the GB cement markets remained unchanged. It also told us that a cement buying group would reduce the ability of cement suppliers to price discriminate and therefore their ability to offer selective price discounts to customers willing to switch their suppliers. Therefore, it considered that a cement buying group might actually lead to prices increasing for all customers.⁶⁹
14. In relation to the views of the cement importers:
 - CRH told us that whilst it was possible to form buying groups for builders’ merchants because they bought a wide range of different building products, RMX producers would only need to purchase aggregates and cement. It considered that these differences in their ‘dynamics’ meant that it would be difficult for them to work together.⁷⁰
 - Dragon Alfa (CPV) told us that its customers were small, independent operators which the GB cement producers found ‘unattractive to serve’. It told us that the quality of service it provided its customers, eg offering timed deliveries which were attractive to small operators, was just as important as its prices. It was concerned that large buying groups were ‘all about low prices’ and therefore this remedy would not be attractive to its business.⁷¹

⁶⁶ [Hanson response hearing summary](#), paragraph 32.

⁶⁷ [Lafarge Tarmac response hearing summary](#), paragraph 37.

⁶⁸ [Aggregate Industries response hearing summary](#), paragraph 21.

⁶⁹ [Aggregate Industries response to Remedies Notice](#), paragraph 4.4.

⁷⁰ [CRH response hearing summary](#), paragraph 16.

⁷¹ [CPV response hearing summary](#), paragraph 17.

15. The following independent cement customers that would potentially be affected by, and included within, the scope of this remedy opposed this proposal:
- [A mid-tier aggregates and RMX producer] told us that a remedy that would lead to the creation of a cement buying group to address any current lack of buying power, would not be necessary as the other remedy options set out in the Remedies Notice would together comprehensively address the Coordination AEC by focusing ‘correctly’ on the structure and behaviour of the GB cement producers, and would also lead to a consequent increase in the relative buyer power of those customers.⁷² Therefore, it considered that the creation of a cement buying group would not be the ‘least onerous’ remedy option available to address the AEC.⁷³ It also told us that compulsory membership to the cement buying group would be ‘highly invasive and interventionist’, and that it was important that cement customers did not ‘suffer disproportionately’ as a result of attempts to ‘rectify the market imbalance’ which was caused at the supplier (rather than the buyer) level of the supply chain.⁷⁴ It also told us that the longer the proposed duration of this remedy, the more ‘invasive and burdensome’ the remedy became, and therefore disproportionate and unreasonable.⁷⁵
 - Brett Group told us that it was not in favour of this remedy, and that it [§<]. It told us that it wanted control over the type of cement it purchased which was driven by a range of criteria, including the customer’s specifications. It therefore needed discretion over which cement supplier to work with.⁷⁶
16. We set out below the view of parties in relation to how a cement buying group might operate and its implementation:
- MI told us that operating a cement buying group might be ‘problematic’ in relation to smaller members, eg potential issues in relation to their credit ratings, need for different contractual terms and the different product they might require.⁷⁷
 - Hanson told us that a cement buying group might enable it to supply customers that were not otherwise creditworthy. It added that this in turn could lead to more favourable pricing where a poor credit rating would otherwise have negatively impacted the customer.⁷⁸
 - Breedon Aggregates considered that if a cement buying group were to be created, it should be able to provide different specifications of cement to customers as required.⁷⁹
 - The OFT told us that a cement buying group would need to have critical mass to ensure efficiency in the supply chain and pass on its benefits to its members, as well as measurable indicators to evaluate its success. However, it added that it would be difficult to see how the establishment of a cement buying group could be required given that customers were not the subject of the market investigation or the AEC. It also queried who should be responsible for setting up a cement buying group should this remedy be implemented.

⁷² Remedies Notice response from [a mid-tier aggregates and RMX producer], paragraphs 2.1 & 2.2.

⁷³ *ibid*, paragraph 2.2.

⁷⁴ *ibid*, paragraph 2.9.

⁷⁵ *ibid*, paragraph 2.10.

⁷⁶ *Brett Group response hearing summary*, paragraph 16.

⁷⁷ *MI and HCM response hearing summary*, paragraph 33.

⁷⁸ *Hanson response hearing summary*, paragraph 34.

⁷⁹ *Breedon Aggregates response hearing summary*, paragraph 17.

- Aggregate Industries told us that under this remedy, the prices charged by cement suppliers might need to be monitored in order to demonstrate the effectiveness of the cement buying group, which would give rise to an ‘impractical administrative burden’ on both cement suppliers and the monitoring authority.⁸⁰ It also told us that there were ‘significant practical issues’ that needed to be overcome in implementing this remedy, and was concerned that the remedy was unlikely to be workable in practice. It cited a number of issues concerning the implementation of this remedy, including (among others): how the cement buying group would design its tender process with cement suppliers to avoid the risk of coordination in such an ‘auction-type arrangement’; how the cement buying group would protect the commercially sensitive information on its members, including their cement requirements, from ‘anticompetitive disclosure’; and how the costs of any bad debt would be split between its members.⁸¹ Aggregate Industries considered that these practical issues could not be ‘feasibly overcome’.⁸²
 - [A mid-tier aggregates and RMX producer] told us that the implementation, monitoring and administration requirements of such a buying group or groups would be considerable and disproportionately burdensome to an extent that they would reduce both the effectiveness and practicability of a remedy of this nature.⁸³
17. In relation to which cement suppliers should be covered by this remedy, Aggregate Industries told us that whilst it imported cement into GB, it should not be included within the scope of this remedy since the AEC did not relate to its conduct, and also given that it was not a GB cement producer, but a cement importer and customer that purchased cement primarily for its own downstream use and supplied only very limited cement to third parties.⁸⁴
18. Whilst the OFT told us that buying groups could in theory increase buyer power and therefore increase competition among cement suppliers through buyers being able to ‘drive harder bargains’ and being more willing to ‘shop around’, it told us that we should consider the impact of this remedy on the balance between buyer and seller power. It explained that absent this remedy, the implementation of RMX and cement plant divestiture remedies that respectively weakened ‘vertical links’ and reduced concentration, would on their own reduce ‘seller power’. It told us that it would not want to see ‘seller power’ reduced so much that ‘market power’ and any resulting ‘anti-competitive aspects’ were merely transferred from the sellers to the buyers.
19. The OFT also told us that the creation of a cement buying group might be accompanied by competition problems of its own and attract regulatory scrutiny, eg if a condition of cement buying group membership prohibited or limited cement buying group members from sourcing their cement outside of their arrangements with the cement buying group. This view was also echoed by a number of other parties:
- Dragon Alfa (CPV) told us that this remedy could have the unintended consequence of being ‘anti-competitive’. It told us that it had been asked in the past to pay a buying group in order to gain access to its members, and in its experience, buying groups precluded potential customers from considering it as a potential supplier.⁸⁵

⁸⁰ [Aggregate Industries response to Remedies Notice](#), paragraph 4.5.

⁸¹ [ibid](#), paragraph 4.6.

⁸² [ibid](#), paragraph 4.7.

⁸³ Remedies Notice response from [\[a mid-tier aggregates and RMX producer\]](#), paragraph 2.5.

⁸⁴ [Aggregate Industries response to Remedies Notice](#), paragraph 4.2.

⁸⁵ [CPV response hearing summary](#), paragraph 18.

- Titan told us that whilst the impact of this remedy could not be known as it would be ‘impossible’ to predict how these buying groups would behave once they were set up, it considered that it would be difficult to justify limiting the GB cement producers’ sales options by requiring them to sell all, or a proportion of their cement volumes, through such buying groups.⁸⁶
 - [A mid-tier aggregates and RMX producer] told us that establishing a buying group raised potential ‘competition law compliance issues’ which would need to be addressed, in particular in relation to pricing and supply terms, but more generally the ‘potential competition law sensitivities which can ordinarily arise from buying groups of this kind’.⁸⁷
20. Aggregate Industries argued that there might be a number of adverse unintended consequences of this remedy on the functioning of the RMX markets and could facilitate ‘coordination by cement buying group members’ by aligning their costs of cement (the principal input into RMX), and creating a forum for discussion of key commercial decisions.⁸⁸ [redacted]⁸⁹
21. Finally, in relation to whether it would be possible for a spot price to be established for cement, whether as part of this remedy or as a separate remedy measure:
- Hanson told us that it had not given much consideration to the use of a spot price for cement, which would provide customers with a benchmark for any negotiations. However, it told us that different members within a cement buying group could have different requirements, and that the price could depend on an individual customer’s requirements, which could often be highly specialized.⁹⁰
 - CRH told us that cement was traded differently from most other commodity products, and therefore it considered that it would be difficult to devise a means by which a spot price for cement could be generated. It added that having a spot price for cement might also lead to unintended consequences, eg spot prices could be manipulated and therefore lead to distortions in competition.⁹¹
 - Breedon Aggregates told us that part of the reason why a spot price for cement did not exist was because prices varied regionally. It believed that if a spot price were to be published, then it would likely result in those paying higher prices to renegotiate, and ultimately, a spot price would simply be a ‘common average price’. Based on its experience in the construction materials business, it considered that this average price would serve little purpose as prices were usually individually negotiated on a ‘deal-by-deal’ basis.⁹²
 - MI told us that its customers would prefer to deal with HCM face to face, and that it would not be a good idea to publish a spot price for cement.⁹³

⁸⁶ Titan response hearing summary, paragraph 18.

⁸⁷ Remedies Notice response from [a mid-tier aggregates and RMX producer], paragraph 2.7.

⁸⁸ Aggregate Industries response to Remedies Notice, paragraph 4.8.

⁸⁹ *ibid*, paragraph 4.4.

⁹⁰ Hanson response hearing summary, paragraph 33.

⁹¹ CRH response hearing summary, paragraph 17.

⁹² Breedon Aggregates response hearing summary, paragraph 18.

⁹³ MI and HCM response hearing summary, paragraph 36.

Our reasons for not taking the remedy option forward

22. Based on the views of parties above, we considered that there were significant technical and practical issues that would arise in relation to both the implementation of this remedy and the operation of a cement buying group once it was established. We considered that these issues would be highly difficult to resolve and if wrongly specified, would undermine its effectiveness, such that we considered that the risks of incorrectly specifying and implementing this remedy outweighed any plausible benefits.
23. The evidence from parties suggested that there were a number of objective commercial reasons why a buying group had not been formed in the past in relation to cement purchases by RMX producers, and these reasons have contributed to our decision that a remedy creating such a buying group for RMX producers may not be practicable or effective. In our view, the most pertinent of these reasons related to the importance of the individual product specification of cement that was required by different RMX producers, which would make it difficult for any buying group to act as a single point of contact to negotiate and procure cement collectively on behalf of all of its members. We considered that this largely explained why such collective buying arrangements were only present in relation to bagged cement purchases. Related to this issue is the potential lack of an ability of a cement buying group to switch cement suppliers readily and easily, eg changes in the specification of cement may cause technical problems in terms of quality and consistency of the concrete produced downstream.
24. We also found that there was a general consensus from parties that individual negotiation and procurement of cement was perceived by the independent RMX producers as a source of their competitive advantage, and therefore the independent RMX producers, ie the targeted beneficiaries of any cement buying group, would not themselves see any benefits of collective negotiation and procurement. Furthermore, we considered that this 'culture of independence' among the independent RMX producers may also be one of the contributory factors that had not led to the formation of a buying group that would represent their collective interests through concerted action in their negotiations with their cement suppliers. We considered that this limited appetite from independent RMX producers would suggest that there would likely be considerable resistance from this sector to being required to join a cement buying group, and reluctance to do so on a voluntary basis.
25. For the reasons outlined above, we have decided not to include this remedy within our package of remedies.

Recommendations on the publication of ETS emissions data

Description of remedy option

1. In our Remedies Notice, we proposed a remedy to make recommendations to the UK Government and/or European Commission aimed at reducing the ability of the Top 3 cement producers to use actual annual verified carbon emissions data published under the ETS to infer each cement plant's individual production and market shares on an annual basis.⁹⁴
2. In Section 8, we found that whilst ETS emissions data was unlikely to be the primary source of information used for monitoring coordination by the Top 3 cement producers, the availability of this data served as a useful and approximate cross-check on the accuracy of other sources of information, thereby contributing to the overall levels of transparency in the market on individual cement plants' production volumes and costs, particularly variable costs.⁹⁵
3. We stated in our Remedies Notice that in order for this remedy to be effective in addressing the AEC, it would require a change in how the European Commission reports and presents its published data for GB and we would expect to work closely with DECC and with DG Clima on the potential specification of this remedy. We envisaged that implementation of this remedy option would take the form of recommendations to the European Commission and the UK Government and may include one or more of the following measures:⁹⁶
 - an increased delay in the publication of annual verified emissions data (the current time lag for publication of verified carbon emissions data is around three months);
 - the exclusion of GB cement plants from published verified carbon emissions data;
 - the aggregation of all GB cement plants' verified carbon emissions data; and/or
 - further aggregation of verified carbon emissions data for GB cement plants with those of other GB ETS sectors.

Views of parties

4. Two of the respondents, Cemex and Hanson were in favour of this remedy. Overall, they each considered that this remedy option would be beneficial in further reducing transparency. Both DECC and DG Clima were opposed to this remedy option on the basis that the public policy benefits heavily outweighed any benefit that might be derived from the remedy. Of the other parties that commented on this remedy proposal, whilst three provided a neutral view, most did not provide any view on this particular remedy option predominantly because they did not utilize the emissions data.

⁹⁴ Remedies Notice, paragraphs 85–87.

⁹⁵ Paragraph 8.206(d).

⁹⁶ Remedies Notice, paragraph 87.

5. Cemex told us that this remedy option was aimed at reinforcing the reduction in transparency,⁹⁷ and considered that it was an effective and proportionate measure which would contribute towards addressing the ‘alleged’ Coordination AEC.⁹⁸
6. Hanson considered that this remedy option would be effective and proportionate (subject to an AEC being proven).⁹⁹ However, it added that careful consideration and discussion with the European Commission would be necessary given the complexities of environmental regulation.¹⁰⁰
7. Lafarge Tarmac told us that it did not propose to comment on this remedy given that it affected the publication of data by the European Commission and was entirely a matter for that authority. It added that it did not wish to influence the manner in which the European Commission chose to exercise its functions.¹⁰¹
8. DECC told us that the annual ETS emissions data was useful to the cement sector and provided ‘significant public policy benefits from the transparent publication of the data across the EU’, which enabled viewers to track developments across Europe.¹⁰² It told us that even if the publication of ETS data contributed to the AEC in the GB cement market, the benefits obtained from publishing the data outweighed any detrimental effects.¹⁰³ DECC also considered that recommendations to aggregate data could set a precedent for other industry sectors which could potentially thwart the ability of the public from assessing how the ETS was delivering emission reductions.¹⁰⁴
9. Aside from the public policy concerns, DECC told us that there were also legal and practical issues. It told us that the ETS Directive¹⁰⁵ would have to be amended which would be a lengthy process requiring a qualified majority of member states to amend the Registries Regulation and the agreement of the European Parliament and the Council of the EU in response to a proposal from the European Commission.¹⁰⁶ It considered that a delay in the publication of the data in place of an outright prohibition would be less problematic,¹⁰⁷ although any lag in publication would have to be uniform across all member states. It told us that this would be problematic given that some member states would not be able to restrict access to the data due to freedom of information legislation.¹⁰⁸
10. DG Clima explained that ‘transparency’ was a feature that was widely present in environmental legislation due to the policy benefits.¹⁰⁹ It told us that the publication of

⁹⁷ [Cemex response to Remedies Notice](#), paragraph 4.32.

⁹⁸ [ibid](#), paragraph 7.1.

⁹⁹ [Hanson response to Remedies Notice](#), Annex, paragraph 6.1.

¹⁰⁰ [ibid](#), paragraph 7.6.

¹⁰¹ [Lafarge Tarmac response to Remedies Notice](#), paragraph 199.

¹⁰² [DECC response hearing summary](#), paragraph 16.

¹⁰³ [ibid](#), paragraph 2.

¹⁰⁴ [DECC response to Remedies Notice](#), paragraph 4.

¹⁰⁵ Article 15A of the amended ETS Directive states that:

Member States and the Commission shall ensure that all decisions and reports relating to quantity and allocation of allowances and to the monitoring, reporting and verification of emissions are immediately disclosed in an orderly manner ensuring non-discriminatory access. Information covered by professional secrecy may not be disclosed to any other person or authority except by virtue of the applicable laws, regulations or administrative provisions'. In addition, the Registries Regulation 2013 which states that by virtue of Article 109 the Central Administrator shall make available information referred to in annex XIV to members of the public via the EU Transaction Log which is the EU-wide database through which all Registry transactions take place. Article 1(e) of annex XIV specifies that the EU Transaction Log shall provide to the public, ‘the verified emissions figure, along with its corrections for the installation related to the operator holding account for year x shall be displayed from the 1 April onwards of year (x81).

¹⁰⁶ [DECC response to Remedies Notice](#), paragraph 9.

¹⁰⁷ [DECC response hearing summary](#), paragraph 5.

¹⁰⁸ [DECC response to Remedies Notice](#), paragraph 3.

¹⁰⁹ [Note of meeting with DG Clima](#), paragraph 2.

verified emissions data was also prescribed by legislation.¹¹⁰ Aside from the public policy benefits, DG Clima told us that the publication of the ETS data facilitated compliance in reducing carbon emissions,¹¹¹ and considered that the remedy option was incapable of being implemented because: (a) a delay in publication by the European Commission would not prevent the information being obtained from elsewhere; (b) a publication delay would be disproportionate given that the aim of the remedy was to regulate a very small number of GB cement plants when balanced against the 10,000 installations across the EU which would also be bound by the delay; (c) the application of equal treatment principles would prevent GB cement producers being excluded from the ambit of the legislation; (d) there was significant value in the data which enabled benchmarking; and (e) aggregating cement emissions data with emissions data from other industries would not be desirable as it would not provide useful information on the environmental impact of each industry in isolation.¹¹²

11. There were a number of legal practicability issues raised by DECC and DG Clima. In essence, to give effect to any recommendation made by the CC, legislative amendment would be required on an EU-wide basis as the publication of ETS emissions data is set out in EU legislation:
 - DG Clima indicated that delaying the publication of the ETS emissions data was not desirable in light of the experience from previous practice. It said that in the past, prior to 2006, the data was published with a six-week time lag. However, it told us that as each member state was responsible for collection and therefore had access to the data in advance of publication, some market participants were able to obtain the information in advance of publication, and that this had the consequence of distorting trading in the carbon market.¹¹³ It also told us that it would not be possible to exclude the GB cement producers from the ambit of the legislation, nor apply a different level of aggregation to GB data than other member states' data in light of the equal treatment principles. It added that any attempt to delay the publication of this data would not be practicable given that it was part of the compliance cycle and corresponded with the date when ETS installations must surrender their used carbon allowances and receive their free allocations.¹¹⁴
 - DECC also referred to these previous problems of delaying publication stating that the process and timing of release of annual ETS data was now well established within the compliance cycle and that any attempt to change this would go against the principle of coordinated release of emissions data and risk adverse effects on the carbon market.¹¹⁵ It also told us that public access to environmental information such as emission data was granted by other legal instruments which the CC should also take into account.¹¹⁶
12. Both DG Clima and DECC told us that were significant public policy benefits in transparency achieved through the publication of the ETS emissions data across the EU:

¹¹⁰ http://ec.europa.eu/clima/policies/ets/documentation_en.htm; its genesis dates back to the Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters (signed 25 June 1998 and implemented in the EU and member states through Directive 2003/4). It further confirmed that the European Court of Justice (Case 524/09 *Ville de Lyon v Caisse des dépôts et consignations* <http://curia.europa.eu/juris/liste.jsf?language=en&num=C-524/09>), which held that data classified as 'environmental information', such as reports of emissions, had to be published, but certain exemptions applied to 'trading data' relating to emission allowances.

¹¹¹ [Note of meeting with DG Clima](#), paragraph 3.

¹¹² *ibid*, paragraph 7.

¹¹³ *ibid*, paragraph 6.

¹¹⁴ *ibid* paragraph 8.

¹¹⁵ [DECC response to Remedies Notice](#), paragraph 3.

¹¹⁶ DECC referred to the Environmental Information Regulations (2004) implementing Directive 2003/4/EC. It also added that the UK cement sector was also covered under the Climate Change Agreements and the CRC Energy Efficiency Scheme which had obligations on publishing emissions data.

- DG Clima told us that transparency was a feature that was widely present in environmental legislation and the publication of emissions data had its genesis in the Aarhus Convention of 1998 that promoted access to information, public participation in decision-making and access to justice in environmental matters.¹¹⁷ It submitted that the rationale for publishing ETS emissions data was to deliver on the public policy benefits of transparency, enabling the public and third parties to see the effectiveness of the ETS in reaching its policy objectives and further, in achieving the aim of facilitating compliance in reducing carbon emissions.¹¹⁸
- DECC told us that publication of ETS emissions data at an installation level assisted the public debate on the effectiveness of carbon reduction efforts by different companies and was in line with the UK's wider transparency agenda. DECC added that it was worried that any change in policy in this sector would have adverse consequences for other sectors.¹¹⁹

Our reasons for not taking the remedy option forward

13. We considered that the recommendations set out in the Remedies Notice under this remedy could each be effective, to some degree, in achieving the limited aim of preventing or making it more difficult for the GB cement producers to cross-check approximately the accuracy of the market share data they observed from other sources such as the published MPA data. However, given the nature of the concern identified, ie the ETS data is used as an approximate 'cross-check' on market data already obtained, such remedial action would only have a marginal impact on the overall level of transparency in this market. We further noted that the GB cement producers needed to make various assumptions in order to utilize the value of this data in conjunction with other industry knowledge.
14. Based on the comments from DG Clima and DECC, we concluded that there were significant practical issues in implementing this remedy in any of the ways proposed in our Remedies Notice. These practical issues are not confined to the process of amending legislative frameworks but also include the impact that any changes would have on the operation of the ETS compliance cycle and the orderly trading of carbon allowances.
15. These submissions also made it clear that any material changes to the current legislative framework could put at risk some of the policy benefits identified by DG Clima and DECC above. We recognized that there is value in the UK public being able to view the level of emissions arising from particular installations that may directly affect them, a benefit which aggregation and/or the exclusion of GB cement producers from the ambit of the data publication would remove. We considered that such policy costs were relevant both to the proportionality of any recommendation we might make and to the likelihood of any recommendation being taken forward, and hence its effectiveness.
16. We also had regard to the costs of implementing and enforcing this remedy. Since the remedial action envisaged was in the form of a recommendation, no monitoring or enforcement would fall to the CC (or the CMA from 1 April 2014). We considered that the costs involved in giving effect to any of the proposals under this remedy would be those incurred by the EU institutions in amending the relevant legislative instruments and those arising to each member state from the subsequent adoption of

¹¹⁷ [Note of meeting with DG Clima](#), paragraph 2.

¹¹⁸ *ibid*, paragraph 3.

¹¹⁹ [DECC response to Remedies Notice](#), paragraph 4.

those changes. We considered it likely that such changes would require lengthy debate and negotiation between and within member states and as such were not likely to be easy or timely to implement, if our proposals were agreed. Furthermore, as any changes may have repercussions across a number of legal instruments, both at an EU and domestic level, we took the view that the cost of implementing a recommendation by the CC to amend the manner in which the ETS data was collected and published could be substantial, particularly relative to its likely benefits.

17. We have set the objectives of a remedy involving a recommendation to the European Commission against the implementation costs and potentially substantial loss of public policy benefits identified above. We have also considered the limited role played by ETS emissions data in the Coordination AEC, that being, an approximate 'cross-check' on data already derived elsewhere. Taking all of these factors into account, it is our view that the costs involved in the implementation of this recommendation are unlikely to outweigh the benefits and that such a recommendation was very unlikely to be taken forward. Given this, we decided not to take this remedy option further.

Divestiture of stand-alone grinding stations

Description of remedy option

1. In Section 7, we found that building a stand-alone clinker grinding station (stand-alone grinding station) was an alternative model for entry into cement production in GB, whereby clinker would be sourced from elsewhere before being ground at the stand-alone grinding station to produce cement.¹²⁰ One party ([REDACTED]) suggested that a divestiture of a stand-alone grinding station may be considered as an alternative to a cement plant divestiture.¹²¹ We explored with the other parties whether this could be regarded as an effective remedy by creating a strong new competitor in the GB cement markets.

Views of parties

2. Cemex considered that a divestiture of its [REDACTED] grinding station would not lead to the creation of an effective competitor in the GB cement markets,¹²² [REDACTED].^{123,124}
3. Cemex also told us that [REDACTED].^{125,126,127}
4. Cemex told us that it ‘strongly’ agreed with the CC’s view set out in the provisional decision on remedies that an operator of a stand-alone grinding station would not be an ‘effective competitor’.¹²⁸ It added that no further consideration should be given by the CC to the possible sale of the Tilbury grinding station, either on a stand-alone or vertically integrated basis.¹²⁹
5. Lafarge Tarmac told us that a divestiture of a stand-alone grinding station would attract more potential buyers than a cement plant divestiture. It noted that there would need to be a ‘ready supply’ of clinker for the operator of the stand-alone grinding station, which could be supplied through imports from countries outside the EU ETS. However, it argued that since imported cement was a ‘ready product’ that could be placed on to the market whilst clinker needed to be ground into cement, it could not see the benefit of importing clinker over cement. It also told us that the high price of electricity in the UK would also be another disadvantage to any potential buyer of a stand-alone grinding station.¹³⁰
6. Hanson told us that hypothetically it might be easier to divest a stand-alone grinding station than a cement plant. However, it noted that a stand-alone grinding station would need to be supplied with imported clinker, and that a buyer would more than likely be an established cement producer rather than an independent, ie with the ability to produce its own clinker.¹³¹

¹²⁰ Paragraph 7.53.

¹²¹ [REDACTED]

¹²² [Cemex response to Remedies Notice](#), paragraph 5.13.

¹²³ *ibid*, paragraph 5.14.

¹²⁴ *ibid*, paragraph 5.13.

¹²⁵ *ibid*, paragraph 5.13.

¹²⁶ *ibid*, paragraph 5.14.

¹²⁷ *ibid*, paragraph 5.13.

¹²⁸ [Cemex response to the provisional decision on remedies](#), paragraph 5.9.

¹²⁹ *ibid*, paragraph 5.13.

¹³⁰ [Lafarge Tarmac response hearing summary](#), paragraph 44.

¹³¹ [Hanson response hearing summary](#), paragraph 51.

7. MI told us that it would be possible to divest a stand-alone grinding station to a buyer that could then import and grind clinker. However, it did not consider that a grinding mill that formed part of a cement plant should be divested.¹³²
8. [REDACTED] Aggregate Industries told us that [REDACTED].¹³³
9. Brett Group told us that [REDACTED].¹³⁴
10. Breedon Aggregates told us that it would not be interested in acquiring a stand-alone grinding station as it would need to source its clinker from imports. However, it considered that a stand-alone grinding station might be attractive to an independent that did have access to clinker.¹³⁵
11. In relation to the views of the cement importers:
 - CRH told us that a divestiture of a grinding station would share the same considerations as for a cement plant divestiture, eg in terms of age, efficiency and location. It noted that since electricity costs were higher in GB than in Spain, it would be likely to be more cost-effective to grind the clinker where electricity was cheaper and then export the cement to GB.¹³⁶
 - Dragon Alfa (CPV) told us that it was not aware of the relative cost difference between importing clinker and cement. [REDACTED]¹³⁷
 - Titan misinterpreted this remedy proposal as a divestiture of a grinding mill that formed part of a cement plant rather than a stand-alone grinding station, eg the Tilbury grinding station. However, it provided a valid argument which alluded to the value of a grinding station to a cement plant. Titan told us that should a GB cement producer choose to relocate to a more efficient cement plant by closing down its smaller operations, it may wish to retain just its grinding station there in order to continue supplying it with clinker and retain market presence. It added that requiring a divestiture of a grinding mill would be an 'unwarranted interference' with a GB cement producer's legitimate ability to structure its business in a cost-efficient way'.¹³⁸

Our reasons for not taking the remedy option forward

12. We considered whether a divestiture of a stand-alone grinding station would represent an effective alternative to a cement plant divestiture remedy.
13. An important concern in relation to a remedy that relied on divestiture of a stand-alone grinding station to act as a competitive constraint on the GB cement producers, related to the ability of its operator to source clinker on economic terms and in sufficient quantities either from domestic sources or from imports:
 - We considered that an operator of a stand-alone grinding station that relied on the GB cement producers for its supply of clinker would not provide an effective competitive constraint, given the incentive and ability of the GB cement producers to

¹³² MI and HCM response hearing summary, paragraph 24.

¹³³ Aggregate Industries response hearing summary, paragraph 17.

¹³⁴ Brett Group response hearing summary, paragraph 29.

¹³⁵ Breedon Aggregates response hearing summary, paragraph 30.

¹³⁶ CRH response hearing summary, paragraph 12.

¹³⁷ CPV response hearing summary, paragraph 31.

¹³⁸ Titan response hearing summary, paragraph 28.

restrict or cease their supply of clinker to their direct competitor in the GB cement markets.

- In Section 7, we found that imported clinker would face a similar cost disadvantage to imported cement, and that this was one of the barriers to entry faced by a potential new entrant that sought to enter into GB cement production by building a stand-alone grinding station.¹³⁹ Given this intrinsic cost disadvantage faced by the operator of a stand-alone grinding station, we did not consider that it would be able to compete on an equal footing with the GB cement producers, which produced their own clinker in GB.
14. Another factor limiting the effectiveness and practicability of this remedy concerns the extremely limited universe of possible divestitures. We noted that there were currently three stand-alone grinding stations, where:¹⁴⁰
- Lafarge Tarmac operates one active grinding station at Barnstone, and has one mothballed grinding station at Westbury; and
 - Cemex operates one active grinding station at Tilbury.
15. We found that the only stand-alone grinding station capable of producing around 1 Mt of cement (the level of production which we would expect from a divested cement plant) was Cemex's Tilbury grinding station, which Cemex told us had capacity to produce [REDACTED]. We also noted Cemex's comment that [REDACTED].^{141,142}
16. We concluded that a divestiture of a stand-alone grinding station would not represent an effective remedy and, in particular, would not be an effective alternative to a cement plant divestiture in our proposed package of remedies. Our primary reason for reaching this view was the intrinsic disadvantage faced by an operator of a stand-alone grinding station in trying to find economic sources for its clinker, compared with the GB cement producers that produced their own clinker to grind. The shortage of potentially suitable facilities to divest was a further practical problem with this remedy. We therefore did not pursue this remedy option.

¹³⁹ Paragraph 7.55.

¹⁴⁰ Remedies Notice, Appendix A.

¹⁴¹ Cemex response to Remedies Notice, paragraph 5.13.

¹⁴² *ibid*, paragraph 5.14.

Information barriers between cement and RMX operations

Description of remedy option

1. Cemex proposed a remedy involving the implementation of an ‘information barrier’ or ‘firewall’ between a GB cement producer’s cement and RMX operations in order to prevent the transmission of information between them, and designed to limit the transfer of price information between these two divisions.¹⁴³ It told us that this would address our concerns that vertical integration facilitated cement cross-sales which increased price transparency through price announcement letters and transmitting information on realized cement prices, as well as giving GB cement producers additional information about their local markets.¹⁴⁴
2. Cemex considered that relatively ‘simple and specific’ information barriers could be put in place to reduce any transparency arising from vertical integration, eg a GB cement producer’s RMX operations could be prohibited from transmitting the following types of information to its upstream cement operations: (a) the price paid for cement purchased from other cement suppliers; (b) cement price announcement letters received from the other GB cement producers; and (c) information received from other GB cement producers on cement prices charged to their other RMX customers, eg during the course of negotiations. In addition, the cement operations could be prohibited from sharing information with its downstream RMX operations concerning the price of cement charged to other RMX producers.¹⁴⁵

Views of parties

3. Cemex considered that restricting the transfer of internal information between a GB cement producer’s cement and RMX operations was a possible remedy, and added that it already had in place such a mechanism under its policy which was to run its businesses as separate entities to a certain extent.¹⁴⁶
4. However, a large number of parties questioned this remedy proposal’s effectiveness, including its practicability:
 - Lafarge Tarmac told us that ‘firewalls’ between a GB cement producer’s cement and RMX operations would not be a ‘viable’ remedy and would be difficult to implement. It added that any firewall would need to be ‘strong’ and therefore this remedy would likely result in a loss of efficiency in terms of management of its different businesses.¹⁴⁷
 - MI told us that it could not see how this remedy proposal could work in practice, or how effective it would be.¹⁴⁸
 - Aggregate Industries told us that its initial impression was that this remedy proposal would not be effective in practice, and would be expensive to administer given the need for separate systems, individuals and parts of buildings. It also had

¹⁴³ [ibid](#), paragraph 4.49.

¹⁴⁴ [ibid](#), paragraph 4.49.

¹⁴⁵ [ibid](#), paragraph 4.50.

¹⁴⁶ [Cemex response hearing summary](#), paragraph 37.

¹⁴⁷ [Lafarge Tarmac response hearing summary](#), paragraph 43.

¹⁴⁸ [MI and HCM response hearing summary](#), paragraph 50.

concerns that ultimately these additional costs would be passed through on to customers.¹⁴⁹

- Brett Group told us that it did not see how this proposal could be practicably implemented. It added that it would be preferable to reduce the number of RMX plants owned by the GB cement producers instead.¹⁵⁰
- Breedon Aggregates considered that any remedy restricting the flow of information about cement prices within a GB cement producer's internal organization would not be effective.¹⁵¹
- CRH did not agree that there should be any information barrier between a GB cement producer's cement and RMX operations, especially in relation to cement prices. It told us that its own RMX operations would not be able to make a profit effectively if they did not have access to all of the information concerning their costs.¹⁵²

Our reasons for not taking the remedy option forward

5. In light of the comments from parties, we considered that this remedy would not be workable in practice given the intrinsic difficulty and possible loss of efficiencies that would arise from preventing the flow of information between individual GB cement producers' cement and RMX operations. In this context we had regard to the recent drive by GB cement producers to increase internal sales that strongly suggested that it would not be possible to prohibit all forms of communication between these two operations. Given that communication, however limited, would reasonably be expected between the cement and RMX operations and could take different forms (eg emails and telephone calls), even for internal sales, we did not consider that this remedy was capable of effective monitoring and enforcement. Given this, we did not consider this to be an effective remedy and have decided not to take this option further.

¹⁴⁹ [Aggregate Industries response hearing summary](#), paragraph 36.

¹⁵⁰ [Brett Group response hearing summary](#), paragraph 28.

¹⁵¹ [Breedon Aggregates response hearing summary](#), paragraph 29.

¹⁵² [CRH response hearing summary](#), paragraph 23.

Mandatory competitive tendering on cement cross-sales

Description of remedy option

1. Hanson proposed a remedy to introduce a mechanism for mandatory competitive tendering when a GB cement producer wished to source cement from third parties. It proposed this as an alternative remedy to any RMX plant divestiture remedy, and told us that this could address our concerns arising from vertical integration in the context of cross-sales facilitating coordination in the GB cement markets.¹⁵³ Hanson told us that this had the potential to address the CC's perceived concerns in relation to the size of the addressable market, reduce any perceived transparency between the Top 3 cement producers, and restrict the opportunity for such sales to be used as a retaliatory mechanism. It considered that such a remedy would retain the benefits of vertical integration and therefore represented a more effective and proportionate remedy than those proposed by the CC in the Remedies Notice.

Views of parties

2. Cemex considered that a remedy implementing a mechanism for mandatory competitive tendering for a specified quantity of cement for the vertically integrated producers' RMX plants (including HCM's RMX plants) would be more proportionate than a remedy involving RMX plant divestitures. It rejected any suggestion that this remedy would be difficult to monitor.
3. CRH told us that from its perspective as a cement importer, it would welcome a requirement for GB cement producers to tender when they needed to buy cement from other suppliers. However, it also had concerns about this proposal as it believed that price would become the 'only consideration' and would displace quality of service and security of supply, which it considered were very important issues for cement producers when sourcing cement from outside their own businesses.¹⁵⁴
4. Another importer, Dragon Alfa (CPV) told us that it had very little involvement with the GB cement producers, and also conducted only a 'small amount of business' with Aggregate Industries. It therefore told us that this proposal would not significantly affect its own business.¹⁵⁵
5. Other parties also did not see this proposal as being necessary or effective:
 - Breedon Aggregates considered that this proposal was unnecessary and likely to be ineffective as it did not believe that cement cross-sales between the GB cement producers contributed to any 'lessening of competition'.¹⁵⁶
 - Brett Group also told us that it did not see any merit in this remedy option.¹⁵⁷
 - Titan did not consider that this proposal would make the 'overall' cement market more competitive. It told us that whilst it might work in theory, in practice the requirement for a GB cement producer to conduct an open tendering process

¹⁵³ [Hanson response hearing summary](#), paragraph 31.

¹⁵⁴ [CRH response hearing summary](#), paragraph 22.

¹⁵⁵ [CPV response hearing summary](#), paragraph 30.

¹⁵⁶ [Breedon Aggregates response hearing summary](#), paragraph 28.

¹⁵⁷ [Brett Group response hearing summary](#), paragraph 27.

when it needed to buy cement, could alert its competitors to the fact that the producer concerned was struggling to supply its customers through its 'regular channels'.¹⁵⁸

- MI told us that the tendering of cement cross-sales could result in another way of signalling to each other.¹⁵⁹

Our reasons for not taking the remedy option forward

6. We received few comments in relation to this remedy option. However, there appeared to be little support for such a remedy in the submissions we did receive. We considered that this remedy would not be effective, as it did not address any of the fundamental causes of the Coordination AEC that we have found.
7. Moreover, we considered there was significant scope for circumvention by the GB cement producers, eg a GB cement producer may decide to issue highly restrictive requirements as part of its tendering process in order to exclude certain suppliers at the outset, and therefore undermine any tendering process. Furthermore, there may be a variety of reasons other than price why a third party supplier may have won a tender, and therefore this would reduce the ability of such a remedy to be readily monitored and enforced.
8. We therefore considered that this remedy – even if it were capable of effective implementation, monitoring and enforcement – would be unlikely to have a material impact on coordination in the GB cement markets. Moreover, the practical difficulties in enforcing such an obligation may well result in the creation of tender processes only in form, but lacking the substance of a genuine tender process. Therefore, we concluded that we would not pursue this remedy.

¹⁵⁸ [Titan response hearing summary](#), paragraph 29.

¹⁵⁹ [MI and HCM response hearing summary](#), paragraph 49.

Alternative remedies for GBS supply

Description of remedy option

1. We considered two further remedy options in relation to GBS supply, which we decided not to pursue:
 - (a) the divestiture of GBS plants by Lafarge Tarmac; and
 - (b) the auctioning of GBS by Lafarge Tarmac to GGBS producers as an alternative to GBS plant divestitures.

Our reasons for not taking the remedy options forward

2. We consider each option in turn.
3. In the provisional decision on remedies, we took the view that two GBS plants would need to be divested. However, as a possible remedy alternative to a GBS plant divestiture, we had considered a behavioural remedy to constrain Lafarge Tarmac's ability and/or incentives to maintain high GBS prices, eg through a price control mechanism (see paragraph 3.330 of the provisional decision on remedies). In the provisional decision on remedies, we stated that there were a number of potential risks with this approach, eg in relation to the specification of such measures to prevent circumvention, as well as costs of monitoring and enforcing the remedy.
4. In the provisional decision on remedies (paragraph 3.328), we set out the following concerns in relation to a remedy that maintained Lafarge Tarmac's position as the sole producer: (a) the structural link between the GB cement and GGBS markets would continue to exist through Lafarge Tarmac's position as both one of the Top 3 GB cement producers and the only GBS producer in GB; (b) if Lafarge Tarmac decided to pursue a strategy of growth for its GBS operations, we considered that it would be incentivized under this scenario to invest in modifying its existing clinker grinding mill(s) to enable it to grind GBS itself to produce GGBS for its own internal and external sales, rather than to sell GBS to any other GGBS producer; (c) Lafarge Tarmac would be able to set GBS prices and volumes with limited competitive constraints from GBS imports, particularly in relation to the GBS sales made to the GGBS plants situated close to its GBS plants, ie the Port Talbot, Scunthorpe and Teesport GGBS plants; and (d) given the relative significance of GBS prices as a proportion of GGBS production costs, the absence of a remedy at the upstream level of GBS supply would result in Lafarge Tarmac retaining significant influence over the final price of GGBS, and the relative price competitiveness of GGBS relative to cement.
5. Based on the above, our main concerns at the provisional decision on remedies stage related to Lafarge Tarmac's ability and incentives to increase GBS prices and/or restrict GBS volumes to GGBS producers. As set out in paragraphs 13.293 to 13.321, we considered that these risks could be addressed by retaining Lafarge Tarmac's key contractual obligations under the existing GBS agreements, ie in relation to the requirement to supply GBS as required by the GGBS producer, and the pricing mechanism contained therein for the GBS supplied.
6. In paragraphs 13.293 to 13.321, we state how the continuation of Lafarge Tarmac's GBS supply arrangements with the acquirer of the divested GGBS plant would

address our concerns highlighted above. Given that such contractual provisions had been effective in constraining Tarmac and Lafarge Tarmac in the past, we considered that circumvention and specification risks could be effectively managed.

7. In its response to the provisional decision on remedies, Lafarge Tarmac also told us that a possible remedy at the GBS stage of the GGBS supply chain that would not involve Lafarge Tarmac exiting its position in GBS could involve Lafarge Tarmac auctioning all of its available water-cooled GBS to any 'willing purchaser'. It argued that since the CC 'concedes' that Lafarge Tarmac 'does not exercise market power' in the production and sale of GBS, it would not be proportionate to require Lafarge Tarmac to exit this position entirely. It added that its GBS activities formed part of a 'wider relationship' with the steel producers that included the removal of air-cooled slag, steel slag and other waste, as well as the supply of limestone fines to the steelworks, and in the case of the Port Talbot steelworks, the operation of a quarry.¹⁶⁰
8. In relation to an auctioning mechanism for GBS, we considered that our approach to maintain Lafarge Tarmac's key contractual obligations to supply and price GBS under the existing GBS agreements presents a more effective and straightforward approach to ensuring that a GGBS producer has access to cost-effective and secure supply of GBS. We therefore did not consider this option further.
9. Based on our assessment above, we concluded that both a divestiture of GBS plants or GBS auctioning would be no more effective and clearly more onerous than our preferred remedy for the GBS level of the GGBS supply chain as set out in Figure 13.4. Consequently, we decided not to pursue either option.

¹⁶⁰ [Lafarge Tarmac response to the provisional decision on remedies](#), paragraph 102(a).

Options ruled out in the Remedies Notice

Description of remedy options

1. In the Remedies Notice,¹⁶¹ we set out our reasons why we were not minded to pursue remedies concerning: (a) the divestiture of cement import terminals; (b) restrictions on cross-sales of cement between the Top 3 cement producers; and (c) and a code of conduct governing the behaviour of the GB cement producers.

Views of parties

2. In its response to the provisional decision on remedies, Lafarge Tarmac told us that the CC had not attempted to consider the incremental effects of the other remedy options that had not been pursued further. It made the following arguments in relation to such non-structural remedy options:¹⁶²
 - (a) *Partial prohibition on cross-sales*: Lafarge Tarmac argued that a partial prohibition on cross-sales would 'directly' address the CC's concern that cross-sales provided GB cement producers with a mechanism through which deviation was detected and punished.
 - (b) *Industry code of conduct*: Lafarge Tarmac told us that a remedy involving an industry code of conduct could form the basis of a remedy that would require GB cement producers to cease cross-subsidization between vertically-integrated cement and RMX operations, and could ensure the availability of competitive pricing terms for independent RMX customers, eg through a commitment not to sell to independent customers at prices which were higher on average than those applied to the internal business.
 - (c) *Access to import terminals*: Lafarge Tarmac told us that measures designed to increase the competitive constraint from importers could include making cement import terminals available to any willing importer on 'fair, reasonable and non-discriminatory terms'. It added that such a remedy would address coordination in the GB cement markets by increasing the effectiveness of external constraints, and that this remedy could be used to address the CC's concern that importers had higher transport costs because cement was transported by sea. Lafarge Tarmac argued that the 'alleged cost disadvantage' could be addressed by granting access at close to cost, and that this lower cost profile and greater capacity to increase volumes would make it more profitable for importers to undercut prevailing prices.

Our reasons for not taking the remedy options forward

3. In response to Lafarge Tarmac's submission above, we address each of Lafarge Tarmac's arguments in relation to alternative remedy options in turn.

¹⁶¹ Remedies Notice, paragraphs 99–111.

¹⁶² Lafarge Tarmac response to the provisional decision on remedies, paragraph 100.

Partial prohibition on cross-sales

4. In our Remedies Notice, we stated that a remedy that prohibited some but not all cross-sales would be very difficult to specify, monitor and enforce. We therefore stated that any concerns arising from cross-sales and vertical integration could be more effectively addressed by means of a structural remedy involving the divestiture of RMX plants.¹⁶³ We have not seen any further evidence to change this view. Our reasons for not pursuing a stand-alone RMX plant divestiture remedy are set out in Appendix 13.6, Annex A.

Industry code of conduct

5. In our Remedies Notice, we stated that, given the variety and extent of conduct contributing to the coordination AEC, it would be 'very difficult to specify, monitor and enforce an effective code of conduct, without intrusive ongoing surveillance and supervision of the internal activities of the Top 3 cement producers'.¹⁶⁴ We had reviewed the published codes of conduct of the Top 3 cement producers and found that these had not prevented the conduct of concern to us in relation to coordination in the GB cement markets. Such a remedy, in our view, can neither be adequately specified nor be even remotely effective without extremely detailed surveillance.

Access to import terminals

6. We found that the strength of the competitive constraint from cement imports was limited, for the reasons given in paragraph 7.123. These reasons did not include difficulties of independent importers gaining access to import terminals, and therefore in relation to Lafarge Tarmac's proposal to grant a 'willing importer' access to import terminals on fair, reasonable and non-discriminatory terms, we considered this to be an ineffective solution. In our Remedies Notice, we had stated that it would not be feasible to address the relative cost issue faced by imported cement, as this appeared to be an 'intrinsic competitive disadvantage' faced by cement importers.¹⁶⁵ As such, difficulties or problems in relation to access to import terminals was not a feature that contributed to our AEC and therefore this is not a measure that we considered would increase the competitive constraint from cement imports, or contribute meaningfully to addressing the AEC.
7. We therefore decided not to pursue any of these three options.

¹⁶³ Remedies Notice, paragraph 106.

¹⁶⁴ *ibid*, paragraph 110.

¹⁶⁵ *ibid*, paragraph 103.

Our assessment of relevant customer benefits

1. In this appendix, we present our assessment of RCBs.
2. We set out our assessment under the following annexes:
 - Annex A: RCBs arising from horizontal market structure in GB cement production
 - Annex B: RCBs arising from existing GGBS arrangements
 - Annex C: RCBs arising from vertical integration
 - Annex D: RCBs arising from transparency of market information
 - Annex E: RCBs arising from generic price announcement letters

RCBs arising from horizontal market structure in GB cement production

1. We treated the following submissions from the Top 3 cement producers as arguments that RCBs could be lost through the implementation of a cement plant divestiture remedy:
 - (a) Lafarge Tarmac told us that the current industry structure benefited from ‘significant’ economies of scope and scale, which if altered through any divestiture remedy, would lead to increased production costs and disruption from a forced sale process, which it considered would well exceed any ‘speculative benefits’ that might accrue in the form of increased competition.¹
 - (b) Hanson told us that a divestiture of one of its cement plant would reduce its operations and footprint as a major GB cement producer, and that this would [✂] business that would ultimately increase costs for customers and consumers.² It also argued that a cement plant divestiture remedy would risk damaging the main industry participants and/or leading to exit and cessation of GB investment.³
 - (c) Cemex told us that any divestiture remedy would weaken it as a ‘competitive force’ which in turn would weaken overall competition in the industry. It highlighted the fact that it only had two cement plants in GB and should it be required to divest one of these plants, it would no longer be able to compete effectively in the GB cement markets.⁴
2. We considered the arguments from the Top 3 cement producers, in particular in relation to whether a divestiture of a cement plant, in particular by Lafarge Tarmac, might result in a loss of any RCBs through the reduction in any efficiencies associated with operating a network of cement plants in GB, eg economies of scale.
3. We considered that such efficiencies might exist, and we examine these in further detail when we consider the costs of implementing our package of remedies in Appendix 13.9. For the purposes of assessing whether the loss of such efficiencies could also result in the loss of any RCBs, we also need to consider whether these efficiencies have been passed on to cement customers in the form of lower prices in the past, or in the absence of effective remedies could reasonably be expected to be passed on to customers in the future.
4. In relation to whether such efficiency savings had benefited customers in the form of lower prices, we examined the evidence concerning the past actions of the GB cement producers in relation to their cost-cutting initiatives in response to the economic downturn.
5. We looked at both margins and prices. However, we placed more weight on the evidence on margins, since there were also significant changes in input costs over the time period for which evidence was available, and an analysis of variable profit and EBITDA margins take into account changes in both prices and costs (including variable and fixed costs):

¹ Lafarge Tarmac response to Remedies Notice, paragraph 219.

² Hanson response to Remedies Notice, paragraph 3.6.

³ *ibid*, paragraph 3.22.

⁴ Cemex response to Remedies Notice, paragraph 5.15(c).

- (a) The impact of the sharp downturn in market demand in 2009 did not have a negative impact on the GB cement producers' variable profit margins on their external sales in FY09. Three of the four producers experienced increases in their margins at this time.⁵ This suggested that any variable cost savings had contributed towards preservation—or even increase—of margins rather than commensurate price reductions for customers.
- (b) In relation to whether fixed cost savings had been passed on to customers, we also found that three of the four GB cement producers' EBITDA margins exhibited stable or increasing trends between 2009 and 2011.⁶
6. If we considered prices in isolation, it was also not clear from the evidence whether any cost savings had been passed on to customers in the form of lower prices:
- (a) We found that in 2009 (a year when the full 12 months' impact of the market downturn would have been felt), the main reason cited by the GB cement producers for the stability or even increase in their variable profit margins in 2009, was that they had cut costs in response to the economic downturn.⁷ However, at the same time, the average unit price of bulk CEM I cement (in real terms) charged by each of the four GB cement producers to independent customers increased in 2009 on prior year levels: (a) from £[x] to £[x] per tonne for Lafarge; (b) from £[x] to £[x] for Cemex; (c) from £[x] to £[x] for Hanson; and (d) from £[x] to £[x] for Tarmac.
- (b) On the other hand, we also noted that real prices of bulk CEM I charged to independent customers had declined for each of the four GB cement producers in 2011 and 2012 on their respective prior year levels. However, it is not clear whether these price changes had been the result of the GB cement producers passing on any cost savings to their customers.
- (c) Whilst we acknowledge that only a proportion of announced price increases are realized, we noted that all the GB cement producers had continued to seek price increases from their bulk CEM I customers throughout the 2007 to 2012 period,⁸ despite any cost savings they were making.
7. In the context of cost efficiencies, we further noted that, in a more competitive environment (such as the one we are aiming to create through the implementation of our package of remedies), there will be stronger pressures on the GB cement producers to seek and pass on such efficiencies.
8. It is therefore far from clear that, in the current absence of vigorous competition in the GB cement markets as a result of the coordination AEC, any cost savings have been passed on to customers in the form of lower prices. In particular, we found no compelling reason to believe that any efficiency benefits arising from Lafarge Tarmac's ownership of multiple cement plants had in the past been passed on to customers. We also note that we did not receive any further evidence from parties that cost savings, including efficiency benefits, had been passed on to customers. In particular, we considered that coordination had enabled the GB cement industry to earn profits above their cost of capital during a severe economic downturn, and that this level of profitability was: (a) sustained on average throughout the six-year period we have considered; and (b) was greater during the second half of this period.

⁵ Paragraph 7.168(b).

⁶ Appendix 6.5.

⁷ Paragraph 8.11.

⁸ Appendix 7.11, Table 1.

9. In relation to the question of whether such efficiency savings might reasonably be expected to benefit customers in the future in the form of lower cement prices, we considered that in the absence of effective remedies, Lafarge Tarmac would have little or no incentive to pass on any existing efficiency benefits to customers in the form of lower prices, if the structure of the GB cement markets remained unchanged and the structural susceptibility of these markets to coordination remained largely unaltered. We address the issue of whether our package of remedies could be effective in addressing the coordination AEC without a cement plant divestiture remedy measure in paragraphs 13.428 to 13.433, when we consider the effectiveness and proportionality of our package of remedies.
10. In relation to the risk cited by Hanson that a divestiture of a cement plant might result in exit from the GB cement markets, our assessment of the cement plant divestiture remedy considered the impact of a divestiture on the divesting party, in order to ensure that the divesting party remained an effective competitor in the GB cement markets in the future. We concluded in our assessment that a divestiture of a single cement plant from Lafarge Tarmac would still leave Lafarge Tarmac with a substantial cement operation that could be an effective competitor.
11. We therefore concluded that potential efficiency savings that related to the operation of multiple cement plants do not represent an RCB as defined in the Act on the basis that we could not reasonably conclude that any such benefits had in the past been passed on to customers in the form of lower prices, and that the absence of an effective package of remedies (which, in our view, necessarily includes a cement plant divestiture) would not create the incentive for Lafarge Tarmac to start passing on any such benefits to customers in the future.
12. We also note that any efficiencies currently arising from the ownership of multiple cement plants in GB could be retained by Hanson and Cemex, and that Lafarge Tarmac would, following the implementation of the cement plant divestiture, still retain three cement plants. We took the view that the most effective means of ensuring any such efficiencies are passed on to customers would be by way of an effective remedy that addresses the coordination AEC and introduces greater competition between the GB cement producers.

RCBs arising from existing GGBS arrangements

1. In relation to the existing GGBS supply chain arrangements, Hanson set out its arguments on the RCBs that arise from them:
 - (a) The ability of Hanson to ‘undertake the investment and make the commitment necessary to promote the benefits of GGBS’¹ to include GGBS ‘as a cement replacement with a lower environmental burden’ which ‘could not be guaranteed with a new entrant’.²
 - (b) Retaining a portfolio of GGBS plants [✂].³
 - (c) The benefits bestowed upon the steel industry from the guaranteed offtake of waste slag (BFS and steel slag).⁴
 - (d) Hanson’s ‘unique experience’ and ‘quality and reliability and security of supply’ which a new entrant would not possess.⁵
 - (e) Hanson considered that a break-up of its GGBS operations would be likely to risk the adverse effects of higher prices as the efficiencies of scale and supply security were lost and buyers then relied on smaller and less efficient operators.⁶
2. We noted that Hanson’s submission above related to the proposed GGBS remedies in the provisional decision on remedies, which involved the divestiture of two GGBS plants and two GBS plants. We have subsequently revised this remedy to require Hanson to divest one GGBS plant. With this in mind, for each of the above arguments presented by Hanson, we first considered the nature of the possible RCB that might be lost if the existing GGBS supply arrangements were altered. We then considered whether such benefit should be defined as an RCB within the statutory framework and definition.
3. In its response to our provisional decision on remedies, Hanson told us that the current supply arrangements in relation to GGBS provided an environment that was ‘conducive to investment in GGBS as an alternative to cement, security of supply of GGBS and optimal quality of GGBS’. It added that these benefits would be lost through the implementation of the proposed GGBS remedies. It explained that quality was ‘absolutely essential in GGBS production and delivery’, and that the CC would appear to be taking ‘extraordinary and unknown risks’ by transferring GGBS operations to operators without the experience and technical expertise.⁷
4. In relation to Hanson’s ability to invest and commit to promoting the benefits of GGBS, we did not consider this to be an RCB for the reason that it was not necessary for the promotion of GGBS to be conducted either by Hanson or in particular, a single GGBS producer. The implementation of our GGBS remedy measure would result in two GGBS producers and we could find no compelling reason to suggest that the creation of greater competition in the supply of GGBS would result in the

¹ [Hanson response to Remedies Notice](#), paragraph 6.39.1.

² *ibid.*, paragraph 6.39.3.

³ *ibid.*, paragraph 6.39.2.

⁴ *ibid.*, paragraph 6.39.4.

⁵ *ibid.*, paragraph 6.39.5.

⁶ *ibid.*, paragraph 6.40.

⁷ [Hanson response to the provisional decision on remedies](#), paragraph 1.5.6.

reduction in the investment into, and the promotion of, GGBS as a cementitious material. GGBS is already a well-established and well-known cementitious material and we expect greater competition in the supply of GGBS to enhance innovation and product or service differentiation, in addition to the benefit of lower GGBS prices and higher levels of output than would be the case under existing supply arrangements.

5. Hanson also told us that without the exclusivity in the long-term supply agreements, there was a risk that parties at the GBS or GGBS levels would not undertake necessary investment or re-investment in assets that were 'relationship-specific', ie where their value depended critically on maintaining the relationship with the specific trading partner. It argued [REDACTED]. It argued that this benefit would be lost in a scenario where there was no exclusivity or comfort on continued supplies of GBS, and that this would damage the market over the longer term.⁸
6. Hanson told us that the current arrangements created a degree of security of demand, and that unlike PFA production, GGBS production required ongoing investment at the GBS and GGBS levels. It also told us that unlike cement, GGBS had no 'captive' or committed demand: it may be fully substituted by alternative products in the vast majority of applications. In addition Hanson told us that developing customer demand required the promotion of GGBS as an alternative to cement.⁹ Hanson told us that the current market structure created a degree of committed market demand in order to underpin such investment. It added that this security of demand was created by Hanson's downstream RMX and concrete products production, as well as, to a certain extent, that of Lafarge Tarmac (which was incentivised to purchase due to its involvement in the supply chain).¹⁰
7. Hanson told us, that 'in contrast to the current situation, where Hanson's ability to supply internally and to Lafarge Tarmac, which supports a national GGBS business, purchasers would not necessarily be incentivised to undertake the necessary investments to become long-term and committed competitors in the market'. It argued that new entrants would either focus on internal supply only (if applicable) or would hold off from the necessary investments required to maintain a long-term presence in the market (if, as expected and highlighted below, the GGBS assets are acquired at a substantial discount, this would encourage purchasers to behave opportunistically).¹¹
8. In relation to Hanson's argument concerning the benefits of retaining a portfolio of GGBS plants, we considered its submission [REDACTED]. We first note that Hanson has five GGBS plants in total, of which three are currently active. As we stated in our discussion of the GGBS remedy measure, we noted the possibility of its mothballed GGBS plants at Teesport (and less likely at Llanwern) being reactivated, such that Hanson would be able to retain a network of three GGBS plants should it wish to do so following the divestiture of a GGBS plant. Our GGBS plant divestiture remedy would result in Hanson not being able to supply customers with GGBS from one existing plant, but it would not prevent the new owner of a GGBS plant from supplying these customers with GGBS. Therefore, we expect that the scenario described by Hanson could result in encouraging GGBS customers to source GGBS from multiple providers in order to mitigate any perceived risks in relation to the ability of the GGBS provider to supply GGBS. Similarly, GGBS producers may seek to source their GBS from both sources in order to mitigate such perceived risks. We considered that a greater prevalence among GGBS customers of dual-sourcing their GGBS could encourage GGBS producers to offer keener and more competitive prices. Therefore, we concluded that

⁸ *ibid*, paragraph 6.18.

⁹ *ibid*, paragraph 6.5.

¹⁰ *ibid*, paragraph 6.6.

¹¹ *ibid*, paragraph 6.7.

this argument might highlight a potential cost for Hanson, but its effect on GGBS customers is likely to be neutral or beneficial.

9. Hanson told us that whilst the CC claimed that the ability to rotate supply around its plants was not a material benefit, the CC then contradicted this by stating that Hanson would retain (following divestiture of two GGBS plants as set out in the provisional decision on remedies) three plants which it could use for rotation purposes. It told us that this was not the case, as it assumed that Hanson would undertake the expenditure necessary to bring the Teesport GGBS plant back on-line. It argued that this was despite the fact that under the CC's proposed remedies, the Teesport GGBS plant would have no guaranteed supply of GBS. In relation to its mothballed Llanwern GGBS plant, Hanson told us that [REDACTED]. Therefore, Hanson argued that the CC greatly overstated Hanson's ability to rotate supply around its plants post-divestment. It added that its need to rotate GBS sources (in view of the risks in the steel industry) should not be confused with the ability to rotate GGBS grinding itself. It told us that its mothballed Llanwern GGBS plant had no GBS supply and therefore Hanson could not possibly rotate a GBS supply to the Llanwern GGBS plant.¹²
10. In its response to our provisional decision on remedies, Hanson told us that GGBS plant divestitures 'may actually raise costs in the industry as the synergies of running a portfolio of three production facilities would be lost'.¹³
11. Hanson told us in its response to our provisional decision on remedies that it was only through access to a national chain of GGBS plants co-located with BFS/GBS sources, together with the Purfleet GGBS plant which was able to take excess GBS supply from other sources, that Hanson was able to offer consistent national coverage in respect of GGBS supply. It told us that this created security of supply in the GBS/GGBS supply chain, and confidence in customers concerning secure supplies of GGBS as an alternative to cement and PFA.¹⁴
12. In its response to our provisional decision on remedies, Hanson told us that the GGBS it produced was of the 'highest quality', and was 'expertly mixed and controlled through its [REDACTED]'. It told us that GGBS had to meet stringent technical specifications, and given the fundamental nature of quality to any construction project, it was unlikely that many customers would accept lower quality grade GGBS. Hanson told us that there was 'variable quality' of the GBS produced at each GBS plant, and that this was regulated only by virtue of Hanson's ownership and access to these varying qualities.¹⁵
13. In relation to Hanson's argument that the existing supply arrangements ensured the off-take of waste slag from the GB steel producers, we considered that it was far from clear why this situation would be any different if GGBS and/or GBS production activities were under different ownership. In relation to the downstream GGBS markets, we expect that greater competition would stimulate demand for GGBS such that the upstream demand for GBS would be maintained or even enhanced, and that this in turn would ensure the continued removal of BFS. We therefore concluded that this was not an RCB.
14. In relation to Hanson's arguments relating to the 'quality and reliability and security of supply' of GGBS, we first note that with greater competition in the supply of GGBS, we would expect GGBS producers to compete on these areas identified by Hanson,

¹² *ibid*, paragraph 6.9.

¹³ *ibid*, paragraph 5.8.

¹⁴ *ibid*, paragraph 6.14.

¹⁵ *ibid*, paragraph 6.15.

and possibly seek to source GBS elsewhere should this be necessary to ensure continuity of supply. We note, however, that Hanson has a considerable amount of expertise and industry knowledge which may not be available to a new entrant in the short term. However, such a potential disadvantage could be mitigated by retaining key staff within the divested GGBS operation, or recruiting new staff with the relevant experience. Moreover, it is unclear to us how Hanson's 'unique experience' in GGBS could be an RCB in the form of lower prices, higher quality or greater choice of goods or services. In any case, we expect that a new entrant could replicate Hanson's knowledge over time as it operated a GGBS plant or plants. We have therefore concluded that this was not an RCB that would be lost.

15. In its response to our provisional decision on remedies, Hanson told us that the ability to blend GGBS would not be as practically or commercially available as it was for Hanson under current arrangements. It added that the remedies would make it significantly more difficult for Hanson (and any new market player) to ensure the quality of its GGBS.¹⁶
16. Finally, we consider Hanson's argument that a break-up of its GGBS operations as a result of our remedies would result in higher prices as efficiencies of scale and supply security were lost. We did not find this argument to be compelling, in particular given that we had found Hanson's returns on its GGBS operations to be considerably in excess of its cost of capital, which implied that prices were higher than in a well-functioning market (see paragraph 8.491). Given the extent of such returns, we did not consider that any alleged scale and network benefits argued by Hanson had been previously passed on to its GGBS customers in the form of lower prices. Absent effective remedy measures to increase competition in the GGBS supply chain, we did not expect Hanson to begin doing so. We also considered it highly unlikely that the divestiture of a GGBS plant by Hanson would result in GGBS prices increasing further on the already high levels we have seen. Rather, we expect that greater competition would be more likely to drive prices down towards competitive levels. We therefore did not consider this to constitute an RCB.
17. We did not identify any substantive comments from other parties that cited any RCBs in relation to the GGBS remedies. We therefore concluded that we found no RCBs from retaining the existing arrangements concerning GGBS supply.

¹⁶ *ibid*, paragraph 6.16.

RCBs arising from vertical integration

1. Whilst we have not taken forward the divestiture of RMX plants as a stand-alone remedy within our package of remedies, we note that as part of our cement plant divestiture remedy, a purchaser of a cement plant may have the option of acquiring a limited number of RMX plants from Lafarge Tarmac. We therefore focused our RCB assessment on the impact of Lafarge Tarmac divesting some of its RMX plants as part of our cement plant divestiture remedy.
2. Lafarge Tarmac told us that value-added products in RMX (VAPs), whilst higher in price than conventional RMX products, were in demand and provided significant benefits to customers, since they saved significant costs through reduced build-times or labour requirements, when compared with conventional RMX products, and therefore were a more cost-efficient solution for a customer overall.¹ It added that if Lafarge Tarmac was required to divest its cement or RMX plants, its ability to provide these VAPs to customers throughout the country would be severely limited.² It added that one of the main purposes of creating its Lafarge Tarmac JV was to improve the geographic footprint of the JV's RMX business in order to allow for the roll-out of Lafarge's VAPs on a nationwide basis.³
3. Hanson told us that vertical integration brought about 'significant efficiencies' that benefited customers, which extended not only in relation to vertical integration of cement into RMX, but also in relation to aggregates into RMX.⁴
4. In response to Hanson's arguments concerning the advantages of vertical integration of aggregates into RMX, we note that under our cement plant divestiture remedy (see paragraphs 13.97 and 13.98), we have granted the divesting party some flexibility to determine which RMX plants should be divested as part of the cement plant divestiture package, so as to minimize any adverse impact on its own aggregates operations.
5. We note that any potential efficiency gains arising from vertical integration should be considered in the context of our cement plant divestiture remedy, where only Lafarge Tarmac would be required to divest some of its RMX plants, and not Hanson or Cemex. We note that the primary objective of including Lafarge Tarmac's RMX plants within a cement plant divestiture package is to ensure that its purchaser would be able to compete effectively as a new GB cement producer, and not to address our concerns in relation to vertical integration (see also our discussion on Remedy X1 above). We have therefore limited the maximum number of RMX plants that a purchaser could acquire by setting an upper limit of a purchaser's downstream cementitious requirement at 15 per cent of its acquired cement plant's production capacity.
6. We noted that, given that the level of this upper limit was also [REDACTED], a purchaser with no RMX plants that acquired RMX plants from Lafarge Tarmac up to its 15 per cent limit would leave Lafarge Tarmac and the new entrant with [REDACTED] internal cementitious requirement to total production capacity. However, a purchaser that chooses to acquire either the Cauldon or Tunstead plant on a stand-alone basis and therefore does not acquire any RMX plants from Lafarge Tarmac would increase the extent of

¹ Lafarge Tarmac response to provisional findings and Remedies Notice, paragraph 255.

² *ibid*, paragraph 256.

³ *ibid*, paragraph 270.

⁴ Hanson response to Remedies Notice, paragraph 5.21.

Lafarge Tarmac's vertical integration. Therefore, Lafarge Tarmac's current level of vertical integration at around 15 per cent broadly represents [REDACTED] of Lafarge Tarmac's vertical integration immediately following the divestiture of its cement plant and any accompanying RMX plants. Furthermore, Lafarge Tarmac's vertical integration would [REDACTED] if a purchaser of a divested cement plant acquired [REDACTED] RMX plants.

7. With this in mind, we note that the loss of any potential RCBs in relation to loss of efficiencies or RMX VAPs would depend on a purchaser's own RMX operations (if any) and its requirement to be vertically integrated downstream. In relation to the level of vertical integration that Lafarge Tarmac would have following the implementation of our cement plant divestiture remedy, we note that its vertical integration level would [REDACTED]. On this basis, we considered that in relative terms, with a smaller network of three cement plants, Lafarge Tarmac could [REDACTED], although in absolute terms, such efficiency savings arising from vertical integration might fall if the amount of internal cement sales also falls in absolute volume terms.
8. However, we noted that none of the GB cement producers was able to quantify the benefits of being vertically integrated,⁵ and we have not received any further evidence that would enable us to quantify such benefits. Whilst there might be some efficiency benefits from internally supplying cement, for essentially the same reasons that are set out in Appendix 13.7, Annex A, paragraph 4, we considered it unlikely that any such benefits would have been passed on to either internal or external cement customers in the form of lower cement prices.
9. Furthermore, given that the number of potential RMX plant divestitures under our cement plant divestiture remedy formed a relatively small part of the overall number of RMX plants that are owned by the GB cement producers and are internally supplied by their respective upstream cement operations, we expect that any benefits that did arise would be limited. We also note that under our proposed package of remedies, there are no restrictions on GB cement producers investing in new RMX plants, and therefore Lafarge Tarmac could acquire or build new RMX plants should it wish to do so.
10. In relation to whether a divestiture of RMX plants by Lafarge Tarmac would result in fewer RMX VAPs being sold to its customers, we considered that this would depend, in part, on whether its customers could buy similar RMX VAPs from Lafarge Tarmac's RMX competitors.
11. This point was considered in the final report for the Anglo/Lafarge JV inquiry, which concluded that whilst:

proprietary technology and know-how might be used to develop VAPs, these have not prevented some competitors from launching their own VAPs and marketing them to customers with similar properties and benefits.⁶ Furthermore, it also found that based on each of the Majors' sales websites for RMX, the list of RMX products which were marketed and sold as VAPs showed that significant overlaps existed in relation to the properties (as described by the Majors on their websites) of some of these VAPs.⁷

⁵ Paragraph 10.8.

⁶ *A report on the anticipated construction materials joint venture between Anglo American PLC and Lafarge S.A.*, Appendix Y, paragraph 51.

⁷ *ibid*, Appendix Y, paragraph 44.

12. We considered that Lafarge Tarmac's VAPs might provide its customers with overall cost-saving benefits, but we found no evidence to suggest that these benefits could not also be gained from using competing VAPs from other RMX producers. We also expect that a purchaser of Lafarge Tarmac's cement plant that also acquired RMX plants would have the financial incentive to provide not only conventional RMX products, but also VAPs (given the higher price achievable on VAPs).
13. Therefore, we concluded that, whilst Lafarge Tarmac's own VAP offering may not be available to customers of any divested RMX plants, the scale of such losses was likely to be very small given the small number of RMX plants likely to be divested and the availability of alternative and competing VAPs from other suppliers. Any potential harm would be further mitigated by RMX customers who value Lafarge Tarmac's VAP offering to continue their RMX purchases from sites to be retained by Lafarge Tarmac and/or by the purchaser of Lafarge Tarmac's cement plant and RMX plants developing and offering its own VAPs to its customers, as it would have incentives to do so.

RCBs arising from transparency of market information

1. A number of parties submitted that the publication of cement market data by the MPA and BIS brought benefits to customers, producers, potential entrants and government and industry bodies.
2. BIS indicated that the data it published was primarily used for market and economic information by Government and industry bodies, including construction trade associations,¹ and that its own investigations indicated that cement data was a good predictor of construction output.² It added that if the data was embargoed for longer than one month, no forecasting model would be able to use it,³ and that it could not use cement data that was six months old for forecasting construction market performance.⁴
3. The MPA considered that restricting access to market data except via a Government source would stifle effective market analysis and innovation.⁵ It believed that the generation of consistent, managed and transparent data was what the Government was trying to encourage and would relieve the administrative burden from government departments.⁶ The MPA told us that through the enquiries it received as a trade association, from a wide range of stakeholders, journalists and the construction industry, there was demand for more data and a sense of where the market was going, in order to inform investment decisions and business planning.⁷
4. The MPA set out the following 'pro-competitive benefits' derived from the published MPA cement and cementitious data, stating that the data:⁸
 - (a) provided regular and consistent aggregated historic market data to support efficient business planning in the cement and cementitious industries;
 - (b) assisted potential new entrants to the industry and in the supply chain to assess the market;
 - (c) provided timely data to Government and its various agencies and organizations such as the Bank of England, to help assess UK economic and construction market conditions and activity levels to support policy developments;
 - (d) enabled financial institutions to provide intelligence on UK market conditions and investment opportunities; and
 - (e) helped the UK Government and the EU to assess carbon and other emissions against their targets in order to regulate the EU ETS and to monitor progress on a transition to a low carbon economy.
5. Cemex also told us that the publication of MPA and BIS data assisted it with planning its cement production volumes.⁹

¹ [BIS response to Remedies Notice](#), paragraph 9.

² *ibid*, paragraph 10.

³ *ibid*, paragraph 11.

⁴ [BIS response hearing summary](#), paragraph 2.

⁵ [MPA response to Remedies Notice](#), paragraph 1.4.

⁶ [MPA response hearing summary](#), paragraph 11.

⁷ *ibid*, paragraph 12.

⁸ [MPA response to Remedies Notice](#), paragraph 7.1.

6. Hanson told us that a time lag in the publication of MPA and BIS data of three months would not unduly affect its planning but a delay up to six months would be damaging to the industry's ability to allow efficient business and production planning.¹⁰ It was also concerned that restricting regional coverage of data would prevent it from making informed decisions regarding logistics of its regional operations.¹¹
7. Brett Group considered that the publication of cement market data was an important part of its knowledge from a procurement perspective in relation to: [REDACTED].¹²
8. Based on the above submissions from parties, it is difficult to identify the exact nature of any benefits to customers arising from publication of the cement market data, ie such that it leads to lower prices, higher quality or greater choice of goods or services in any UK market. For example, one potential benefit might be that the publication of this data would assist recipients of the data and decision makers to reach better informed decisions, which would in turn save costs.
9. However, given that our remedy in relation to the MPA and BIS cement market data does not prohibit its publication, but delays its publication from one to three months, we concluded that any benefits of publishing this data were largely retained by our remedy. We also concluded that the change in the time lag for publication of this data would not unduly remove the efficacy of the data. We concluded that, to the extent there was an RCB arising from this data, this RCB would not be materially reduced as a result of introducing our proposed remedy.

⁹ [Cemex response hearing summary](#), paragraph 17.

¹⁰ [Hanson response hearing summary](#), paragraph 40.

¹¹ [ibid](#), paragraph 42.

¹² [Brett Group response hearing summary](#), paragraph 20.

RCBs arising from generic price announcement letters

1. We noted that some parties indicated that there were benefits from sending or receiving generic price announcement letters for cement:
 - (a) Aggregate Industries considered that the use of price announcement letters in general was an efficient way of communicating forecast price increases to customers, and added that they enabled customers to plan ahead for increases in prices. Therefore, it believed that price announcement letters gave rise to significant 'relevant customer benefits'.¹
 - (b) Cemex considered that a blanket prohibition on sending generalized price letters to customers would be disproportionate and would create transaction costs for both cement producers and customers.²
 - (c) Hanson suggested that customers needed to have suitable advance notice of any price increases for business planning purposes (and that the current practice of sending out letters in advance to customers has arisen due to customer requirements).³
 - (d) CPV (Dragon Alfa) noted that generalized price announcement letters provided an indication of what the GB cement producers wanted to achieve and in turn, what it should be doing with its own prices. It added that it had used the generalized price announcement letters it received in its negotiations with its own customers.⁴
 - (e) Brett Group told us that it found generalized cement price announcement letters helpful and it expected to be written to by cement suppliers with regard to prices going forward.⁵
2. Lafarge Tarmac told us that price announcement letters were still in demand from customers who used them for budgetary and negotiating purposes, but did not oppose the prohibition of generalized letters. It considered that whilst the prohibition of generalized letters would result in some additional administration costs, it would be of benefit to the industry as it would focus cement companies on negotiating individually with their customers.⁶
3. However, the following parties did not believe that generalized letters provided any benefits to customers:
 - (a) Breedon Aggregates told us that it could not see the 'customer benefit' in receiving generalized price announcement letters and would prefer to receive a personalized letter from a particular cement supplier when it was a natural point of the relationship to discuss price rather than receive a generalized price announcement letter along with every other purchaser of cement.⁷

¹ [Aggregate Industries response to Remedies Notice](#), paragraph 5.2.

² [Cemex response to Remedies Notice](#), paragraph 5.8.

³ [Hanson response to Remedies Notice](#), paragraph 7.10.2.

⁴ [CPV \(Dragon Alfa\) response hearing summary](#), paragraph 20.

⁵ [Brett Group response hearing summary](#), paragraph 19.

⁶ [Lafarge Tarmac response hearing summary](#), paragraph 38.

⁷ [Breedon Aggregates response hearing summary](#), paragraph 20.

(b) MI (HCM) told us that it could see the ‘customer benefit’ argument of receiving generalized price increase letters but considered the argument rather light.⁸

4. Based on the evidence we received, we concluded that any possible benefits associated with generic price announcement letters could be retained, if not enhanced, if cement customers were to communicate with customers specifically by reference to their own terms and conditions (as permitted by our remedy measure in Figure 13.3) rather than simply communicating an aspiration for a market-wide price increase as currently happens. We concluded that, to the extent there was any RCB arising from sending price announcement letters, this RCB would be enhanced as opposed to reduced as a result of introducing our remedy.

⁸ [MI/HCM response hearing summary](#), paragraph 37.

Interaction between our remedies and EU law

1. In this appendix we consider a number of issues concerning the interaction between our remedies and the application of EU law.

Issues raised by the parties

2. Hanson and Lafarge Tarmac made a number of submissions concerning the relationship between the remedies that we proposed to implement and EU law. Broadly speaking, these submissions covered the interaction of the CC's remedies with (a) the European Commission's decision in the Heidelberg/Hanson merger case;¹ (b) the European Commission's parallel investigation under Article 101 TFEU opened on 10 December 2010 under Article 11(6) of Regulation 1/2003 (the Regulation);² and (c) the duty imposed on member states and their competition authorities by Article 3 of the Regulation. We consider each of these submissions in turn below.
3. In response to our Remedies Notice, Hanson stated that the GGBS industry structure had been expressly approved by the European Commission in its Heidelberg/Hanson merger decision of 2007. Hanson stated that the application by the CC of structural remedies would in effect allow the CC to apply national competition legislation to a concentration already expressly approved by the European Commission, which, it stated, would be a perversion of the EUMR³ if a member state could bypass the one-stop-shop principle (and its underlying principles of subsidiarity and legal certainty) through the application of the market investigation regime. Hanson stated that the agreements were fully disclosed and visible to the European Commission at the time it assessed the merger, that the European Commission reviewed the arrangements and had no concerns regarding them or otherwise requiring remedial actions or any form of undertakings.
4. In its response to the provisional decision on remedies, Hanson stated that the European Commission specifically reviewed and discussed the potential for coordinated effects between cement and GGBS during its investigation of the Heidelberg/Hanson merger and unconditionally granted clearance at Phase 1. It also stated that the OFT had the opportunity to request a reference back to the UK, if it considered at the time that the merger was of significant importance to the UK, and also, that it had the right of appeal of the clearance decision. As the OFT did not avail itself of either option, Hanson suggested that this signified that the OFT did not have any significant objections to the change in the market arising from the merger and that consequently the OFT's comments on the CC's proposed remedies in this area should be disregarded.
5. Hanson stated that the implementation by the CC of structural remedies would in effect allow the CC to apply national competition legislation to a concentration already expressly approved by the European Commission (contrary to the 'one-stop shop' principle) and it would undo the approved acquisition between Heidelberg and Hanson. Hanson further stated that the CC could, in principle, seek to revisit the

¹ Case No. COMP/M.4719 HeidelbergCement/Hanson, European Commission decision dated 7 August 2007.

² Council Regulation (European Commission) No1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty (now Articles 101 and 102 of the TFEU).

³ Council Regulation (European Commission) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings (EUMR).

analysis if changes in the market conditions warranted and thereafter pointed to the type of changes it considered might be relevant to such an analysis.

6. Hanson also stated that if the GBS agreements (by which we understand it to mean the agreements that it entered into and maintained with Lafarge Tarmac) were to be analysed under Article 101 (or 102) of the Treaty on the Functioning of the European Union (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 that GGBS production was equivalent to only about 12.5 per cent, would be balanced against the efficiencies created by the GBS supply agreements. 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. Hanson stated that the CC had failed to set out clearly how it would have jurisdiction to interfere with these agreements given the constraints of the Regulation.
7. Lafarge Tarmac stated that the potential relevance of Article 3 of the Regulation was that the CC had no power to apply Article 101 TFEU, which only the OFT and certain regulators had been designated with responsibility to apply in the UK. Lafarge Tarmac highlighted that there was an ongoing parallel investigation under Article 101 TFEU by the European Commission that was already in progress when the OFT referred the market investigation to the CC.
8. Hanson stated in its response to the provisional decision on remedies that the fact that the GBS agreements are covered by the European Commission's investigatory scope prevents the CC from imposing the proposed remedies in relation to the agreements prior to the conclusion of the European Commission's investigation. Hanson's contention is that the CC could come to a different outcome to the European Commission and would be prohibiting an agreement that the European Commission could hold does not restrict competition.

Our assessment of these issues

9. Article 3 of the Regulation contains two distinct requirements found in Article 3(1) and 3(2). Article 3(1) provides that if the national competition authorities apply national competition law to agreements within the meaning of Article 101(1) TFEU which may affect trade between member states within the meaning of that provision, they shall also apply Article 101 TFEU to such agreements. Article 3(2) states that the application of national competition law may not lead to the prohibition of agreements which may affect trade between member states but which do not restrict competition within the meaning of Article 101(1) TFEU or which fulfil the conditions of Article 101(3) TFEU or which are covered by a Regulation for the application of Article 101(3).
10. The CC's market investigation regime sits within a broader spectrum of competition law, operating alongside other regulatory mechanisms such as merger control, the prohibitions under the TFEU and the Competition Act 1998.⁴ The scope and purpose of each of these regimes differ, though collectively they reflect the determination of successive governments to establish a scheme of complementary measures to make markets work well. A market investigation assesses whether competition in a market as a whole is working well as opposed to focusing on a specified change in the structure of a market or a single aspect of it or the conduct of particular firms within it. The CC may in a market inquiry consider the effects of agreements that may engage

⁴ The Guidelines, [paragraph 18](#).

Article 101 TFEU. When considering remedies the CC will take account of its duties under Article 3 of the Regulation.

11. Where an AEC is found, the CC can impose a wide range of enforceable remedies that typically focus on making the market more competitive. The identification of anti-competitive features in a market investigation or the imposition of remedies does not mean that market participants have infringed the law and this is recognized in the CC's guidelines.⁵
12. Taking the European Commission Heidelberg/Hanson merger case first. 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 the section on market definition in Section 5.⁶
13. The nature of our assessment differs from that of the European Commission. We are looking at a market investigation under the Enterprise Act and how competition as a whole operates in the market(s) defined. By contrast the European Commission was examining the incremental effect from a merger between suppliers of cement and GGBS respectively. The European Commission's merger investigation was not equivalent in scope to our analysis which has looked at, among other things, the structural and conduct features of the cement market that have led to the finding of two AECs connected to the supply of GGBS in GB. As set out in Section 8, these features encompass aspects of GBS and GGBS production involving two Top 3 cement producers.
14. We do not agree with Hanson's submission that the European Commission's findings on the Heidelberg/Hanson merger mean that the European Commission, having been provided with the agreements, had 'no concerns regarding the arrangements or otherwise requiring remedial actions or any form of undertakings'. For good reasons the European Commission did not consider the issues now being considered by the CC.
15. Further, we are investigating the market in GB six years after the European Commission conducted its merger assessment. We have the advantage of being able to assess the actual performance of the GGBS supply chain in GB over the course of those six years, evidence that has also informed our assessment of the likely future impact of the AECs identified. We disagree with Hanson's submission that we are bound by the merger decision as relates to GGBS market definition and competitive assessment. However, we have of course been mindful of the European Commission's findings.
16. Hanson refers to Article 21(3) EUMR to support its submission that the CC is prevented from implementing remedies to address any AEC we might find as it would 'undo' the merger between Heidelberg and Hanson. This is not a correct application of Article 21(3) of the EUMR, which deals with the jurisdiction of the EU regarding mergers having a 'Community dimension' (as defined in Article 1 of the EUMR). The CC is conducting a market investigation into the performance of the cement markets in GB and not a merger reviewable under the EUMR. Furthermore, having regard to the scope of the remedies decided upon by the CC, to suggest that any action identified by the CC to remedy the AECs found would 'undo' the merger between Heidelberg and Hanson is untenable.

⁵ *ibid*, paragraph 21.

⁶ Paragraphs 5.91–5.93, and Appendix 5.3, paragraphs 34–38.

17. Accordingly, we are of the view that the Heidelberg/Hanson 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.
18. 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 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 arising.
19. We do not see that there will necessarily be any conflict with Article 3 of the Regulation, nor with any enforcement action that may be taken by an authority which has competence to apply Article 101 TFEU. In particular, we do not agree with Hanson's submission that the CC's divestment remedy in the GGBS supply chain might 'adversely impact the flexibility of the European Commission as regards any remedies that it would seek to impose if it were to find a breach of Article 101' (on the assumption that it is the European Commission which has competence, under Article 11(6) of the Regulation). We do not consider that any aspect of our proposed remedies would inhibit the remedies which the European Commission might impose following its investigation.
20. Finally, we have considered Hanson's submission that, were the GBS agreements to be analysed under Article 101 (or 102) TFEU, there would be no scope for intervention given the limited impact of the agreements on the wider cementitious sector when balanced against the efficiencies created by them. In its response to the provisional decision on remedies, Hanson stated that it was firmly of the view that the agreements were compatible with EU and UK Competition law and would not fall within Article 101(1). As noted above, Hanson stated that the limited role of GGBS within the wider cementitious products market demonstrated that any effects would be unlikely to be appreciable, given the very large differentials in comparative volumes between the respective products and the clear limitations with regard to the possible impact that GGBS could have on the wider cementitious market. Hanson also cited that at least one of the agreements received clearance under the Restrictive Trade Practices Acts 1976 and 1977 at the time it was entered into which, it stated, provides strong support for its submission and should carry more weight than an ex post facto analysis.⁷
21. Hanson submitted that 'the right decision would be for the CC to conclude either [that] the agreements do not fall within Article 101(1) or that they merit an exemption under Article 101(3). If it does this, but concludes that there may be an effect on trade between EU Member States, the CC cannot take action against the agreements'.
22. In carrying out its statutory duties under Part 4 of the Act, the CC is the competent authority to investigate and remedy the effects of any features of the referred markets which it has found prevent, restrict or distort competition. The CC is not a designated authority with powers to apply Articles 101 and 102 of the TFEU for the purposes of Article 3 of the Regulation.

⁷ We addressed this point in paragraph 8.459. We are not persuaded by Hanson's submission that RTPA clearances precludes the CC from examining the agreements now or seeking remedies for the AECs found, or that an earlier decision taken under a different legal framework should carry more weight than the CC's current assessment.

23. In making findings on the statutory questions in this investigation we have concluded that an effective and proportionate remedy to address the AECs connected with GGBS is to require the divestment of a GGBS plant and to ensure that the new owner has access to a sufficient source of supply of GBS enabling it to be an effective competitor to Hanson, including in circumstances of market expansion.
24. The arrangements for the supply of GBS to the GGBS plants that may be divested are structured in such a way that the existing agreement does not need to be brought to an end or restructured, but could be continued by the new owner on the basis of a novation. Our remedy focuses on the divestiture of a GGBS plant and the transfer of the existing supply arrangements associated with that plant. Some limited consequential changes 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, other than these changes which are consequential on the proposed divestment, our remedy does not require changes to the terms of the existing agreements. Rather, it is envisaged that those terms could remain in place and that they will facilitate the purposes of our remedy. For these reasons, Article 3 of the Regulation is not engaged and we do not consider that our remedies would create any actual or potential conflict with the CC's duties under the Regulation.
25. Notwithstanding the above, we considered whether the agreements would give rise to an effect on inter-state trade. Where there is no such effect, there is also no scope for any conflict with the Regulation.
26. Looking at the upstream market for GBS supply in the first instance, we noted that there are limited GBS imports into and exports from the UK. We noted that Lafarge Tarmac had a market share of just under 100 per cent of all GBS sold in GB in 2012, it being the sole producer of GBS in GB and imports being limited.⁸ We also noted that exports of GBS were limited, with Lafarge Tarmac exporting less than [REDACTED] per cent of its total GBS sales. That these limited levels of imports are a longer-term factor of the market is supported by the paper prepared for Hanson by [REDACTED], in the context Hanson's acquisition of Civil and Marine (Holdings) Ltd in 2006. That paper observed, based on management estimates, that granulated slag could only be imported in small quantities and at higher cost than purchasing from Tarmac.⁹ Although Hanson imports GBS at its Purfleet GGBS plant the amounts are small, and Hanson has expressed to us its concern about its ability to import GBS into this plant for logistical reasons including the constraints of the wharf, tidal patterns, 'ship-to-shore' and storage facilities.
27. We have observed that GBS plants tend to be co-located with GGBS plants; evidence that supported the existence of logistical problems and costs associated with the transport of GBS over larger distances. Hanson confirmed that the GGBS plants located at steelworks (ie Port Talbot and Scunthorpe) sourced all of their GBS from their nearest GBS plant.¹⁰ We acknowledge that Hanson has told us that on occasion there is a need to transfer GBS between GGBS plants for quality reasons¹¹ but overall, we concluded that we would not expect imported GBS to be a competitive source

⁸ See Appendix 13.5, Annex E, Supplement 3.

⁹ See Appendix 7.16.

¹⁰ Appendix 13.5, paragraph 36.

¹¹ *ibid.*

of supply for the Port Talbot and Scunthorpe GGBS plants, given the close proximity of their respective local GBS plants.¹²

28. In relation to the downstream market in GGBS, imports are at a cost disadvantage compared with GB-produced GGBS which limits the competitive constraint they pose.¹³ Imported GGBS accounted for only about 10 per cent of sales of GGBS in GB in 2011.¹⁴ Most imported GGBS 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.¹⁵
29. In light of the above and our findings in relation to the functioning of the GGBS supply chain,¹⁶ the activities of Hanson and Lafarge Tarmac are domestic in nature, having no real influence on the pattern of trade between member states. Accordingly, on balance, we did not consider the agreements to have an appreciable effect on trade between member states sufficient for the agreements to fall within the scope of Article 101 TFEU.
30. In conclusion, the least onerous remedy package that would be effective in addressing the GGBS AECs is to require the divestment of a GGBS plant where the current GBS supply agreement in relation to that plant is novated or mirrored subject to some consequential amendments to give effect to the divestment. The remedy identified is a divestment of a plant rather than the prohibition of the GBS agreements and any consequential amendments to the agreements will be the minimum necessary to ensure that the divestment remedy can effectively address the AECs found. Furthermore, the option over any future increased GBS production need not prohibit the current arrangements between Hanson and Lafarge Tarmac in relation to the Teesside GGBS plant but may supplement that agreement. The CC expects Hanson, Lafarge Tarmac and the new entrant to work with the CC to facilitate this, which may be done through new bilateral agreements as an alternative to amendments to the existing agreements.
31. For the avoidance of doubt, the CC is not making any findings as to the compatibility or otherwise of these agreements with domestic or EU competition law and there remains an obligation on all parties active in the GGBS supply chain to ensure that the agreements they enter into are fully compliant with their legal obligations.

¹² *ibid*, paragraph 39.

¹³ Paragraph 8.444.

¹⁴ Paragraph 5.90.

¹⁵ Paragraph 8.438.

¹⁶ We noted that Hanson's entire purchases of GB GBS are for use in its GGBS production which is confined to the UK.

Costs of remedies

Introduction

1. This appendix sets out our analysis of the costs associated with each of the measures in our package of remedies:
 - (a) a cement plant divestiture involving either Lafarge Tarmac's Cauldon or Tunstead plant;
 - (b) two measures aimed at reducing the extent of market transparency:
 - (i) restrictions on the publication of GB cement market data; and
 - (ii) a prohibition of the practice of issuing generic cement price announcements; and
 - (c) measures to increase competition in the GGBS supply chain.
2. This analysis informs our assessment of the proportionality of our proposed remedy measures (see paragraph 13.409 onwards).
3. We examine the costs of each of the measures in turn.

Costs of divestiture of Lafarge Tarmac's Cauldon or Tunstead plant

4. We consider the costs associated with divesting either Lafarge Tarmac's Cauldon or Tunstead plant (see Figure 13.1).
5. Lafarge Tarmac submitted some evidence and its views on the costs associated with the divestiture of a cement plant.¹ Some of the other GB cement producers also submitted evidence and their views on the types of costs that were likely to be associated with a cement plant divestiture (see Appendix 13.1 and Appendix 13.2, Annex A). Of the categories of costs put forward to us, we considered the following to be relevant to our assessment:
 - (a) *One-off costs associated with a cement plant divestiture.* These relate to:
 - (i) the costs of separation, including both the costs of separating the divested assets from Lafarge Tarmac and the costs of reorganizing the retained operations with a smaller network of plants;
 - (ii) the costs of implementing the divestiture, including fees payable to third-party advisers, eg bankers and lawyers; and
 - (iii) the costs to the divesting party of not attracting a fair value for the divested assets.
 - (b) *Ongoing costs.* These costs mainly relate to the loss of any economies of scale and/or scope to Lafarge Tarmac from operating a smaller network of plants.

¹ [Lafarge Tarmac response to provisional findings and Remedies Notice](#), 25 June 2013; and other submissions.

6. We examine each of the above categories of costs further below.
7. Some parties identified other categories of costs that might be associated with the divestiture of a cement plant, which we considered not to be relevant to our assessment. We discuss these in paragraphs 59 to 63 below.
8. To assist us in our analysis, we requested Lafarge Tarmac to provide us with information on the costs that were associated with its recent sale of the Hope divestiture package to MI, which comprised the Hope cement plant and a package of associated operations including RMX, aggregates and asphalt sites from both Lafarge and Tarmac (the Hope divestiture package). We recognized that the divestiture of the Hope divestiture package would have entailed different costs from those that may be incurred from the potential separation of either the Cauldon or Tunstead plant, for example due to factors specific to the cement plant; the larger scale and complexity of the Hope divestiture package; and the fact that the divested assets that formed part of the Hope divestiture package came from two firms rather than one. However, we considered that evidence concerning the costs of divesting the Hope divestiture package could provide us with some insight—albeit likely to be an overestimate given the additional scale and complexity of the Hope divestiture package and divestiture process—into the costs of a divestiture of either the Cauldon or Tunstead plant.
9. To place into context the issues associated with separating either the Cauldon or Tunstead plant from Lafarge Tarmac’s network of plants, and the potential costs associated with operating a smaller network of plants, we first outline Lafarge Tarmac’s current network of cement plants and the possible impact of a cement plant divestiture on its network.

Lafarge Tarmac’s current network of cement plants and the impact of divestiture

10. Lafarge Tarmac operates four cement plants in GB, namely the Aberthaw, Cauldon, Dunbar, and Tunstead plants, as well as one specialist cement facility at Barnstone, and a number of depots and blending stations. Divestiture of either the Tunstead or Cauldon plant would:
 - (a) reduce the number of cement plants operated by Lafarge Tarmac in GB from four to three;
 - (b) reduce Lafarge Tarmac’s GB cement production capacity by around [REDACTED] Mt per year (nameplate capacity) out of a current total nameplate capacity of around [REDACTED] million tonnes, ie Lafarge Tarmac’s GB cement production capacity would be reduced by around 30 per cent; and
 - (c) whilst the Cauldon and Tunstead plants are located relatively close to each other, and have similar catchment areas in relation to 50 per cent of their respective sales volumes, we found that the Tunstead plant has a wider customer catchment area than the Cauldon plant at the 80 and 90 per cent levels (see Appendix 13.2, Annex C, Supplement 4). Therefore, there might be some impact on the geographical coverage that Lafarge Tarmac would be able to achieve depending on which of the two cement plants is divested.
11. For the purpose of our analysis of the costs of remedies that follows, it is worth noting some of the specific assets that are associated with each of the two cement plants:
 - (a) The Tunstead plant is partially rail-linked whilst the Cauldon plant is not rail-linked.

- (b) Cauldon has [X] cement packers, [X] of which produce plastic-packed cement products, the other paper packed products.
- (c) Cauldon is home to Lafarge Tarmac's National Laboratory and Sapphire Energy Recovery, Lafarge Tarmac's alternative energy operations.

One-off costs of divestiture

- 12. The following broad categories of one-off costs may be associated with a cement plant divestiture:
 - (a) costs of running the divestiture process;
 - (b) one-off costs of separating either the Tunstead or Cauldon plant from the Lafarge Tarmac business, including costs of restructuring Lafarge Tarmac's remaining business across a smaller network of plants; and
 - (c) any cost to Lafarge Tarmac of not realizing a fair value for the divested plant.
- 13. We examine each of the above in turn.

One-off costs of running the divestiture process

- 14. Lafarge Tarmac submitted that the divestiture of one of its cement plants would entail the following one-off costs in relation to running the divestiture process:
 - (a) Costs arising from diverting management and staff time to assess and run the divestiture process, including preparing due diligence data rooms; responding to queries; conducting site visits; and collecting, preparing and verifying data and information provided to potential purchasers. Lafarge Tarmac told us that [X] full-time equivalent mid-senior level employees were involved in managing the divestiture process of the Hope divestiture package, which took place between May 2012 and January 2013. Whilst we acknowledge that the work involved in separating out a cement plant from a network is considerable, we would expect the resources employed in the divestiture of the Hope divestiture package to represent an overestimate of the potential management costs associated with a divestiture of either the Cauldon or Tunstead plant, as the divestiture package under our remedy would be significantly smaller; involve many fewer sites; and would not involve a 'mix-and-match' of operations from two separate parent companies, ie Anglo American and Lafarge.
 - (b) Costs associated with the uncertainty up until the point of divestiture, during which time capital expenditure would be suspended which may otherwise have resulted in efficiency improvements. Lafarge Tarmac told us that it was not able to put forward an estimate of these costs in relation to the divestiture of the Hope divestiture package. We did not consider that the cost of uncertainty would be significant, as any uncertainty on whether a particular cement plant would be divested was largely within Lafarge Tarmac's control and, in any case, would be substantially reduced once Lafarge Tarmac decides which cement plant it chooses to divest.
 - (c) Costs relating to the legal and banking fees incurred to run a sale process. Lafarge Tarmac told us that the costs of appointing an investment bank to run the sale process would be around 3 to 5 per cent of the sale price. Lafarge Tarmac told us that, based on its experience with the divestiture of Hope, it estimated that

the fees for divesting a cement plant would range from £[x] to £[x] million 'for a straight forward and simple divestment'. It also told us that the cost would be significantly more if there was a requirement to divest a plant with a management and sales team in place, as was the case with the Hope divestment package.

- (d) Costs of appointing a monitoring trustee. Based on our experience, we would not expect this to exceed £0.5–0.75 million.

One-off costs of separation

15. Some of the one-off costs of divestiture relate to the costs of separating the relevant cement plant from Lafarge Tarmac's remaining network. In this context, Lafarge Tarmac identified the following costs:
- (a) Costs of physically extracting the asset from the network (including costs of purchasing new hardware required to operate two separate IT systems). Lafarge Tarmac told us that it had incurred £[x] million in creating an IT system for HCM as part of the divestiture of the Hope divestiture package.
- (b) Capital investment in the residual network to replicate key elements lost in the divestiture, eg rail-linking, packing facilities, blending facilities, storage for products, laboratory, and alternative fuel operations.
16. In relation to item (b) above, we considered that the costs associated with any capital investment that Lafarge Tarmac might need to make to replicate any key elements lost through the divestiture of a cement plant to be potentially relevant, though only in part.
17. In particular, we considered that the costs associated with replicating key elements of Lafarge Tarmac's plant sold in the divestiture would not be relevant costs if those key elements were wholly part of the production process of the cement plant being divested. Subject to considerations about the risk of not receiving a fair value on divestiture, which we consider further below, we concluded that the cost to Lafarge Tarmac of having those key elements divested would be fully reflected in the sale price of the divested operations.
18. On the other hand, we considered it appropriate to take account of any one-off costs incurred by Lafarge Tarmac to reorganize its network in order to continue the same activities from the set of plants that remain in its network as before. The divestiture of a key asset would give rise to such costs to the extent that the divested asset was also part of the production process of Lafarge Tarmac's remaining business.
19. Among the assets which could be divested as part of a divestiture of either the Cauldon or Tunstead plant, we found that the following assets have played an important part in Lafarge Tarmac's wider operations:
- (a) *The limestone quarry at Tunstead.* This quarry supplies limestone to Tunstead plant and to Lafarge Tarmac's lime business. We would consider various options for this quarry, including divesting it with the cement plant or requiring Lafarge Tarmac to provide a purchaser with access to limestone as part of the divestiture agreement (see paragraph 13.71). Given this, we would not expect Lafarge Tarmac's wider operations to be adversely impacted should it choose to divest its Tunstead plant.
- (b) *National Laboratory.* Lafarge Tarmac's National Laboratory conducts research and development activities into cement and concrete applications. It is located on

the Cauldon site and operates as an independent facility in a separate building on the edge of the site. It employs [§] full-time-equivalent staff. We would not require or expect Lafarge Tarmac to divest the National Laboratory, should it choose to divest the Cauldon plant. Lafarge Tarmac told us that, in the event of a divestment of Cauldon, it would be feasible for it to retain and operate the National Laboratory within the Cauldon site and that this would be Lafarge Tarmac's preferred option. Alternatively, were the laboratory to be relocated, Lafarge Tarmac would retain the employment of the laboratory staff and relevant laboratory equipment that could be extracted from the site. Lafarge Tarmac would incur some costs of relocating the facility. The evidence submitted by Lafarge Tarmac to date did not suggest that the costs of such relocation were likely to be large, given that Lafarge Tarmac also has other operations close to the Cauldon plant (notably the Tunstead plant) and these could be potential candidate locations to which to relocate its laboratory. Lafarge Tarmac told us that it estimated that the costs of relocating the laboratory to Tunstead, its nearest equivalent cement facility, would be around £[§] million for obtaining an equivalent building and around £[§] for relocating the equipment—those were the cost estimates obtained in 2006 when the National Laboratory was relocated from Greenhithe (Kent) to its current site in Cauldon. Lafarge Tarmac also told us that, in the event of the laboratory being relocated, it did not anticipate that any essential work routinely carried out at the National Laboratory would need to be externally sourced in the period over which the laboratory was being moved.

(c) *Sapphire Energy Recovery*. These are Lafarge Tarmac's alternative fuel operations, which are located at the Cauldon site. We would consider various options in relation to these operations, which would not necessarily form part of any divestiture package. Lafarge Tarmac told us that the Sapphire personnel at Cauldon work in a separate building on site, with separate access and parking facilities. It added that, in principle, it may be possible for Lafarge Tarmac to carve out and retain the building and land from the remaining cement plant in the event of a divestment of Cauldon. We recognize that, otherwise, some facilities and employees of Sapphire Energy Recovery might be relocated should the Cauldon plant be divested. This could involve the relocation of Sapphire Energy Recovery staff working at the Cauldon site. In 2011, Sapphire Energy Recovery employed around [§] staff.² Of the staff employed, [§] are currently based at Cauldon. We considered that it would be a commercial decision for Sapphire Energy Recovery and any acquirer of the Cauldon plant to decide whether or not the Cauldon plant continued to use the alternative fuels provided by Sapphire Energy Recovery to power the Cauldon plant following any divestiture.

20. We have not identified any other major assets that would be divested as part of the divestiture of either the Cauldon or Tunstead plant, which are employed in the production process of what would be Lafarge Tarmac's remaining network. In particular, we are not aware that any of the packaging facilities, blending facilities, rail depots and other depots that would be divested as part of the divestiture of either the Cauldon or Tunstead plant are shared to any significant extent by the remaining cement plants within Lafarge Tarmac's network.
21. We noted that, during the Anglo–Lafarge remedies process, Anglo American and Lafarge had opted to integrate the Tunstead plant into Lafarge's network and divest the Hope plant, rather than divesting the Tunstead plant (which was not part of Lafarge's network). Lafarge therefore chose not to avoid the one-off costs associated

² Sapphire Energy Recovery annual accounts for 2011 report the number of employees as [§]. We understand Sapphire Energy Recovery operates various regional facilities across the country, where we expect some of the [§] to be based.

with the separation of the Hope plant and those associated with the integration of the Tunstead plant into its network. This suggests that the perceived benefits of acquiring the Tunstead plant rather than keeping the Hope plant outweighed any costs of separation and integration.

Cost of not achieving fair value

22. Lafarge Tarmac submitted to us that it would face a risk that the divestiture of one of its cement plants would not attract a fair value. We see fair value as being the value that the sale of the asset would achieve when the sale process is not unduly hindered, and where there is competition among potential buyers for the purchase of the asset. Further, fair value reflects the valuation by interested buyers of the business assuming that that business operates in a competitive environment.
23. Lafarge Tarmac told us that the conditions of a forced sale would render it highly unlikely that the seller would obtain full or fair value for the asset.³ Further, it put to us that in the present case, given that the other major GB cement producers would be excluded as potential purchasers, there was every reason to suppose that there would be very few, if any, purchasers for a cement plant and the seller would therefore be likely to obtain a price well below the fair value of the cement plant.⁴ In its response to the provisional decision on remedies, Lafarge Tarmac further stressed that the time period allowed for the divestiture [§] from the final determination of this investigation (ie the CC accepting final undertakings or making a final order) was too short a time window and that it was impossible to achieve a sale at fair market price within that period.⁵
24. We took the view that the potential difference between the sale price of divested assets and their fair value was a cost that would be relevant to our consideration. We considered that a seller's ability to secure a fair price for its divested assets would be affected by its ability to generate competition to buy the assets. There are a number of factors that would contribute to this:
 - (a) Consideration of the number, and type, of potential purchasers. We have decided to exclude from the set of potential buyers, the other GB cement producers, namely Hanson, Cemex and HCM (MI). However, we expect interest in acquiring a divested cement plant to come from other sources, both within and outside the cement industry. At the time of the remedies process for the Anglo–Lafarge JV in 2012, for example, we saw evidence of interest from a variety of parties interested in acquiring a cement plant. [§] In our view, Anglo American and Lafarge were able to attract a number of credible bidders to generate sufficient competitive tension to ensure that Hope divestiture package was sold at a fair price.
 - (b) Consideration of the cement plant being divested, and of the divestiture package as a whole, eg whether or not some RMX plants would be included in the divestiture package. We reflected on the parties' views on what would represent a suitable divestiture package in the design of this remedy (see paragraphs 13.56 to 13.103). We expect either the Cauldon or Tunstead plant, together with any associated RMX plant divestitures and other facilities (eg depots), to be attractive to potential purchasers.

³ Lafarge Tarmac response to provisional findings and Remedies Notice, paragraphs 234 & 235.

⁴ *ibid.*, paragraph 234.

⁵ Lafarge Tarmac response to provisional decision on remedies, paragraph 89.

- (c) Consideration of time allowed for the divestiture to happen. We have decided to allow [x] months for divestiture following agreement of undertakings or an Order, whichever may be appropriate; this date is known as the final determination of the investigation. This is significantly longer than the period of time (just over [x] months) between the CC's final report on the Anglo–Lafarge JV inquiry and the divestiture of the Hope divestiture package. Lafarge Tarmac told us that Anglo American's and Lafarge's investment banking and legal advisors had been working on the JV for some months ahead of the announcement of the proposed JV, and that to address the possibility that a divestment might be required, had begun work on the preparation of an Information Memorandum as early as March 2011, some 18 months before the CC's report was published.⁶ While some such preparatory work may have occurred, the scale and scope of the necessary divestitures was not known until the CC's final report into the proposed JV was published. Given this—and the fact that the [x]-month divestiture period will run from final determination of this investigation, rather than publication of our final report—we took the view that the actual timescale required to achieve divestiture of the Hope package following publication of our final report was a relevant comparator for the divestiture of Cauldon or Tunstead. We concluded that our proposed maximum divestiture period in relation to the divestiture of either the Cauldon or Tunstead plant is more than adequate to enable Lafarge Tarmac to secure a fair value for its assets.
25. A report prepared by Lafarge Tarmac's external financial expert stated that the EBITDA contribution of the Hope plant to Lafarge's UK business, prior to the creation of Lafarge Tarmac was £[x] million, and that the EBITDA of the whole business that was divested was £[x] million and that the sale price of the whole business was £[x] million, ie the Enterprise Value (EV).⁷ Based on these numbers, Lafarge Tarmac's external financial expert attributed a transaction price relating to the Hope plant of £[x] million ([x]).⁸ Lafarge Tarmac submitted that this represented an EV/EBITDA of [x]), which it perceived as a low number and indicative of having sold the Hope plant at a significant discount.
26. We considered this analysis. We noted that the £[x] million EBITDA attributed to the Hope plant was based on the EBITDA of the Hope plant in 2011 before the allocation of any central costs. However, we considered it more appropriate for the exercise at hand to take into account the EBITDA after the allocation of central costs given that central costs (or at least its allocation) would necessarily be incurred by any purchaser of the Hope plant, and we would expect a purchaser to take such costs into consideration. We used Lafarge Tarmac's own allocation of central costs to its Hope plant, and calculated that the EBITDA after central cost allocations of the Hope plant was around £[x] million in 2011 and £[x] million in 2012. In our view, since the transaction was completed in January 2013, we would expect the Hope plant's 2012 EBITDA (out-turn) to have been a relevant consideration in its valuation.
27. If we take Lafarge Tarmac's estimate of the EV of the Hope plant element of £[x] million, then based on the Hope plant's 2012 EBITDA of £[x] million, the EV/EBITDA multiple achieved on its sale would be eight times whilst the multiple would be six times if 2011 EBITDA of £[x] million was used. Furthermore, we also note that in Lafarge Tarmac's submission, the allocation of the total purchase price to the Hope plant element was based on the proportion of the EBITDA of the divestiture package accounted for by the Hope plant. This implies that the same EV/EBITDA

⁶ *ibid.*, paragraphs 86 & 87.

⁷ Expert Report of Professor Chris Higson, paragraph 52. The report was submitted as part of [Lafarge Tarmac's response to the provisional findings](#).

⁸ *ibid.*

multiple applies for the Hope plant as well as for each of the other divested assets, including aggregates sites, asphalt and RMX plants. Given the inherent and significant differences between such production assets and respective markets of operation, we did not expect that the same valuation multiple should apply to each of these different operations. Given this, as well as the inherent uncertainty in such exercises, we did not consider that this analysis of valuation multiples provided any evidence that Lafarge Tarmac received less than fair value for the sale of the Hope plant.

28. Lafarge Tarmac also submitted an extract from a broker report listing the EV/EBITDA multiples of European building companies. Based on this report's 2012 data, these multiples ranged from 5.8 to 13.2, with the sector average reported to be 8.5. Lafarge Tarmac also told us that the value of consideration on the sale of a cement plant in Honduras by Lafarge SA was 8.6 times EBITDA. We attached little weight to this evidence as we considered that the trading valuation multiples of European building material companies (some of which operated outside our reference markets) and the sale of a cement plant in Honduras were far removed from the scenario we are interested in, ie the sale of one cement plant and a relatively small number of RMX plants within GB.
29. With regard to drawing a comparison between the level of interest in the purchase of the Hope plant in 2012 and the level of interest that there might be in the purchase of either the Cauldon or Tunstead plant under our proposed remedy, we note that there are some signs that the cement industry has moved on in the cycle. Monthly data from the MPA on GB cement sales up to and including September 2013 show that year-on-year sales have slowly increased since end-March 2013. To the extent that this reflects an upturn in the market, we might anticipate that expectations of future market growth would be reflected in the level of interest in the purchase of a GB cement plant at this point in time and, to some degree, in purchasers' valuations of the opportunity to enter the GB cement market in this way.
30. It is also the case that we are proposing a significantly longer period to implement this remedy than the period taken to complete the divestiture of the Hope divestiture package. We considered that this longer time period will further reduce the risk of Lafarge Tarmac selling the relevant assets below fair value.

Conclusions on one-off costs

31. We concluded that the one-off costs associated with the divestiture of either the Cauldon or Tunstead plant by Lafarge Tarmac, which are relevant to our assessment relate principally to the costs of separation and to the costs of carrying out the divestiture process. We further concluded that there was no evidence to suggest that Lafarge Tarmac would not be able to receive a fair value for any of its divested operations.
32. Taking the evidence as a whole, we considered that these one-off costs could be in the region of around £10–£20 million.

Ongoing costs associated with the divestiture of a cement plant

33. We considered that the relevant costs that would be ongoing as a result of the divestiture of a cement plant would be any costs associated with any economies of scale and/or scope that would be lost as a result of divestiture. Lafarge Tarmac submitted that there were efficiencies associated with the operation of a network of

cement plants, and that the divestiture of one of its cement plants would mean that it would lose these, and raise the costs of production faced by Lafarge Tarmac.

Ongoing costs identified by Lafarge Tarmac

34. Lafarge Tarmac submitted that a divestiture of a cement plant was bound to cause significant harm to its efficiency of production and cause considerable disruption to production. It submitted that the reduction in the size of one of the major GB cement producers may result in an increase in average and marginal costs, and that this would be to the ultimate detriment of consumers. It told us that at present, Lafarge Tarmac operated effectively at full capacity at its operations at the Aberthaw, Tunstead and Cauldon plants, and that this network allowed certain efficiencies, such as Lafarge Tarmac's ability to concentrate bagged production at the Cauldon plant. Lafarge Tarmac submitted that a divestiture would therefore undermine its operational efficiency.⁹
35. Lafarge Tarmac also submitted that, if it divested one of its cement plants, it would face increases in the costs of operating its remaining network of plants, as reduced scale would diminish its economies of scale. Specifically, Lafarge Tarmac submitted that:
- (a) Cost efficiencies associated with the sharing of resources across cement plants, such as management and administration, and IT facilities would be reduced.
 - (b) The reduced size of Lafarge Tarmac's remaining network would likely diminish its negotiating power with its upstream suppliers, therefore increasing the unit cost of its inputs, such as fuels and raw materials.
 - (c) Road hauliers and rail freight providers would likely increase their rates to Lafarge Tarmac on the basis that they would be servicing a smaller network.
 - (d) A reduction in its cement plant network would have detrimental effects on Lafarge Tarmac's ability, and flexibility, to supply customers, as it would not be able to rely on as extensive a distribution network as it currently runs.
 - (e) The critical mass required for Lafarge Tarmac to justify research and development of new products for GB consumers would be eroded, thereby limiting the development of new value-creating services or low carbon products.
 - (f) Lafarge Tarmac would have a reduced capacity to benchmark efficiency and costs across and between cement plants that had the effect of driving efficiencies further.
 - (g) Lafarge Tarmac would have reduced resilience in its retained network to withstand instances of plant breakdowns and, accordingly, would need to increase spending on maintenance in order to reduce further the risk of breakdowns. Reduced resilience to breakdowns would have a direct impact on customers as a result of Lafarge Tarmac's reduced ability to ensure continuity of supply.
 - (h) Lafarge Tarmac also told us that it derived significant benefit from its current network by being able to draw on the management and expertise of a large team of managers with extensive depth of experiences, and that to the extent that

⁹ [Lafarge Tarmac response to provisional findings and Remedies Notice](#), paragraph 237.

existing staff would move with the divested plant, the loss of such experience and corporate knowledge would give rise to further, unquantifiable costs.

- (i) Lafarge Tarmac would have a smaller asset base from which revenues could be generated to meet these increased costs.

36. We asked Lafarge Tarmac to provide further evidence and analysis of these costs, drawing on its experience of the divestiture of the Hope divestiture package. In response, Lafarge Tarmac submitted its estimates of the ongoing annual costs associated with the divestiture of one of its cement plants, which made a distinction between the additional costs to Lafarge Tarmac; the additional costs to the purchaser of the divested plant; and the ongoing costs related to the loss of efficiencies associated with the separation of the divested plant from the remaining Lafarge Tarmac network. A summary of these estimates is set out in Table 1.

TABLE 1 Lafarge Tarmac estimates of annual ongoing costs of a cement plant divestiture

	<i>£m per year</i>
<i>Additional cost to Lafarge Tarmac</i>	
Selling General & Administrative costs	[£]
Logistics contract and raw materials	[£]
Purchase of other products	[£]
<i>Additional cost to new entrant (ie to a purchaser of a divested plant)</i>	
Selling General & Administrative costs	[£]
Logistics contracts and raw materials	[£]
Purchase of other products	[£]
Establishment of a laboratory facility	[£]
Inefficiencies of separation from Lafarge Tarmac's network	[£]
Total	27.0

Source: Lafarge Tarmac.

37. We understand that the estimated £[~~£~~] million associated with the inefficiencies from separating a cement plant from Lafarge Tarmac's network was based on the estimated synergies that Lafarge Tarmac expects to make at the Tunstead plant following the integration of that plant into its network. It argued that such synergies could be seen as an estimate of the additional costs a cement plant would face if it moved away from the remaining network. We consider this issue further in paragraphs 51 to 56 below.

38. The main category of additional cost identified by Lafarge Tarmac related to duplication of overhead costs (Selling, General & Administrative (SG&A)). Lafarge Tarmac estimated overhead costs for a divested cement plant to be around £[~~£~~] million, as shown in Table 1. It told us that the estimate was drawn from its experience of divesting Hope, and in particular that the estimate was based on figures in HCM's Information Memorandum on the SG&A costs which the buyer of Hope would have had to incur to set up an organizational structure for the Hope business.¹⁰ We acknowledge that any purchaser of a divested plant would have some overhead costs associated with running its new plant. However, taking Lafarge Tarmac's estimate at face value, we did not consider it appropriate to count all such overhead costs as a cost of the remedy. Rather, the relevant costs relate to the extent to which we expect the purchaser to incur overhead costs in operating the plant over and

¹⁰ Lafarge Tarmac response to provisional decision on remedies, paragraph 91(a) & Table 1.

above those that Lafarge Tarmac currently incurs. Figures from the profit and loss account for the Hope plant for 2012, suggest that the SG&A costs there were around £[redacted] million.¹¹ On this basis, and taking Lafarge Tarmac's £[redacted] million at face value, the relevant additional costs of concern to us would be £[redacted] million a year. In addition, [redacted] of overhead costs submitted by Lafarge Tarmac (£[redacted] million) related to the finance function. To the extent that a purchaser already had a finance function it may be able to combine its overheads with its other operations such that any gap between its overhead costs of running the divested plant and those incurred by Lafarge Tarmac may be smaller. Similar considerations are also likely to apply to HR and other central support functions.¹²

39. In its response to the provisional decision on remedies, Lafarge Tarmac clarified how to interpret the additional £[redacted] million of SG&A costs to Lafarge Tarmac associated with operating with one fewer cement plants, shown in Table 1. It told us that this was an estimate of its SG&A costs that would not be reduced after the sale of a plant because 'all of the SG&A head office functions and resources would still be required to perform the same task as previously' but would now be spread over four rather than five plants.¹³ We did not consider that this was an 'additional' cost that should be added to any difference between the overhead costs of a purchaser in running a divested cement plant and the overhead costs of Lafarge Tarmac for running the same plant. Moreover, we found it implausible that Lafarge Tarmac would not be able to reduce its own SG&A costs significantly to account for a smaller number of cement plants, though we acknowledge that this might be achieved over a period of time.
40. We concluded that it was unlikely that any relevant additional overhead costs would exceed £2–£3 million a year, and such costs could well be smaller than this in the event of a sale to a purchaser who would, like Lafarge Tarmac, be able to share central functions with other operations.
41. Lafarge Tarmac also included in its set of additional costs to a buyer, £[redacted] million relating to the costs of setting up a laboratory facility. This is based on Lafarge Tarmac's current costs of running the National Laboratory at Cauldon. We do not think that this figure is relevant for our consideration, as it would be a matter for the purchaser to determine whether to set up a new laboratory facility and on what scale.
42. The other categories of additional ongoing cost submitted by Lafarge Tarmac relate mainly to the terms on which Lafarge Tarmac and any purchaser of a cement plant could procure their inputs, which would depend on a range of factors, including the overall negotiating position of any purchaser of a cement plant as well as the scale of its cement activities. We consider this further below.

¹¹ We have estimated this on the basis of summing the share of central costs related to 'Sales and Marketing' and 'General administration' that are allocated to Hope.

¹² Lafarge Tarmac submitted that the additional SG&A costs of a buyer would be greater than its £[redacted] million figure in the event that the divestiture package includes RMX plants. In that event, Lafarge Tarmac suggest that the additional SG&A costs that would be incurred by a buyer without downstream business would could be as high as £[redacted] million—£[redacted] million relating to cement, and £[redacted] million relating to RMX and aggregates SG&A. We think that the £[redacted] million relating to RMX and aggregates figure is a significant overestimate of the costs that are relevant to our assessment. As before, we consider that the relevant SG&A costs for our assessment are those that the buyer would incur over and above those incurred by Lafarge Tarmac itself. Further, and also as suggested above in the context of cement, we expect that a buyer to be able to combine its overheads with its other operations such that any gap between its overhead costs of running the divested plant and those incurred by Lafarge Tarmac may be smaller and potentially eliminated altogether.

¹³ [Lafarge Tarmac response to provisional decision on remedies](#), paragraph 93.

Our assessment of other relevant ongoing costs

43. We considered that the other main relevant costs that were identified by Lafarge Tarmac and which may be directly related to a reduction in the number of its plants and scale of its operations were the following:
- (a) obtaining worse conditions from suppliers on the purchase of raw materials, energy, fuel, rail and road freight as a consequence of its reduced purchases of these goods and services; and
 - (b) a reduction in Lafarge Tarmac's flexibility to plan production across a larger number of cement plants (including possibly increased maintenance costs and loss of efficiencies in production and sales due to specialization of certain plants).
44. We consider each of these in turn below.
45. Table 1 above reports Lafarge Tarmac estimate of £[redacted] million of additional ongoing costs that the buyer would incur in relation to purchase of logistics and raw materials, and of the additional £[redacted] million cost for purchasing other products. Appendix 13.2, Annex C, Supplement 5, Table 1, sets out the top five raw materials by volume consumed at each of Lafarge Tarmac's cement plants during 2012. To inform our view on the potential effect on the reduced purchasing power associated with the divestiture of a cement plant, we considered the overlap in the purchase of these top five raw materials between the plant that would be divested, either the Cauldon or Tunstead plant, and the remaining cement plants. The only overlap we identified related to Lafarge Tarmac's purchases of gypsum from [redacted] for both its Cauldon and Tunstead plants. Each cement plant used around [redacted]. There were no other overlaps in the purchase of the remaining set of top five raw materials as Lafarge Tarmac either sources the remaining top five raw materials internally, or because it sources them from different external providers.
46. With regard to the purchase of energy, we understand that Lafarge Tarmac procures its energy at a UK-wide company level, which covers both its cement and other building materials operations (eg aggregates, RMX and asphalt) in GB and in Northern Ireland. We calculated that its cement plants accounted for a significant proportion of the total energy consumed at the company-wide level—around [redacted] per cent in 2012 based on consumption data that included the Hope plant but excluded the Tunstead plant. This suggests that the sale of either the Cauldon or Tunstead plant could lead to a reduction in the amount of energy purchased by Lafarge Tarmac of around [redacted]. We do not have information on how this may be expected to impact on Lafarge Tarmac's per unit energy cost, if at all.
47. The divestiture of either the Cauldon or Tunstead plant would also have a material impact on volumes transported by road; and a divestiture of the Tunstead plant would reduce volumes transported by rail (see Appendix 13.2, Annex C, Supplement 3). Lafarge Tarmac submitted to us that road hauliers and freight train operators would offer it poorer terms if volumes were to reduce. Again, Lafarge Tarmac did not support its argument with information or evidence on how this may be expected to impact its per unit transport cost, if at all.
48. We considered that there might be some loss of efficiency associated with Lafarge Tarmac having less flexibility to plan production across its network of plants following the divestiture of one cement plant. For example, if Lafarge Tarmac decided to interrupt or reduce production at one plant for maintenance purposes it may find it harder to meet demand by managing (and increasing) production at its remaining plants. We note, however, that, following the divestiture of either the Cauldon or Tunstead plant,

Lafarge Tarmac would still retain three cement plants operating around [REDACTED] Mt of capacity, higher than that of any of the other GB cement producers. We concluded that any such loss of efficiency was likely to be small.

49. We recognize that, following a cement plant divestiture and the choice by Lafarge Tarmac to replicate any lost capabilities, it might lose some efficiencies associated with specialization in its remaining plants. For example, were the Cauldon plant to be divested and Lafarge Tarmac decided to divert some of its production at the Tunstead plant away from bulk cement and towards packed cement, it might lose some efficiencies with regard to bulk cement. However, Lafarge Tarmac did not provide evidence that any such costs would be significant.

Categories of ongoing costs that we consider to be not relevant or not significant

50. Lafarge Tarmac submitted several categories of ongoing costs associated with the divestiture of a cement plant which we did not consider to be significant and/or relevant:
- (a) Reduction in research and development (R&D) to develop new products for GB consumers because of the smaller size of Lafarge Tarmac's cement business in GB. In our view, Lafarge Tarmac benefits primarily from the R&D activities carried out by Lafarge SA on a global scale, and therefore a reduction in total GB sales is unlikely to impact materially on the R&D decisions of Lafarge Tarmac. The benefit to Lafarge Tarmac of the R&D carried out by Lafarge SA was a factor put forward by the main parties during the CC's investigation into the Anglo-Lafarge JV.
 - (b) Lafarge Tarmac also told us that it would have reduced capacity to benchmark efficiency and costs across and between plants, which had enabled driving efficiencies further. We are not persuaded by this argument. Lafarge Tarmac would continue to run three cement plants in GB, and we expect it would be still be able to benefit from benchmarking exercises with Lafarge SA's plants operated both in Europe and elsewhere. For example, Lafarge Tarmac stated that it could use technical key performance indicator data for [REDACTED].¹⁴
 - (c) Lafarge Tarmac also told us that it derived significant benefit from its current network by being able to draw on the management and expertise of a large team of managers with extensive depth of experiences, and that to the extent that existing staff would move with the divested plant, the loss of such experience and corporate knowledge would give rise to further, unquantifiable, costs. Again, we considered that Lafarge Tarmac would continue to be able to benefit from expertise and management of staff at its remaining three plants, as well as that from Lafarge SA's very extensive set of plants outside GB.
 - (d) Lafarge Tarmac would have a smaller asset base from which revenues can be generated to meet these increased costs. We considered that this point was a representation of the arguments put forward by Lafarge Tarmac in relation to the loss of efficiencies of scale and of network, addressed earlier in this appendix.

Expected synergies at the Tunstead plant following the Anglo-Lafarge JV

51. In support of its submission, Lafarge Tarmac provided information on the synergies achieved by Lafarge Tarmac through the integration of the Tunstead plant. It told us

¹⁴ Appendix 6.5, paragraph 25(a).

that these synergies would amount to up to £[redacted] million a year. This estimate forms the basis for Lafarge Tarmac's estimate that the one-off costs of separating a cement plant would be around £[redacted] million (see paragraph 37 above).

52. The breakdown of the estimated synergies is set out in Table 2 below, which reports the sum of the synergies in 2015 at £[redacted] million rather than the £[redacted] million as quoted earlier. We were told by Lafarge Tarmac that the figure of £[redacted] million was a revision of the initial £[redacted] million. We were not shown a breakdown based on the revised total and therefore we have decided to report the breakdown based on the unrevised higher figure.

TABLE 2 Lafarge Tarmac's estimates of synergies from operating the Tunstead plant as part of its wider network, 2013 to 2015

Synergy area	£ million		
	2013	2014	2015
Alternative fuels (10% increase in use of alternative fuels at the Tunstead plant)	[redacted]	[redacted]	[redacted]
Grinding power	[redacted]	[redacted]	[redacted]
Fixed cost reductions (reductions in the Tunstead plant's maintenance costs as a result of being part of a wider network, therefore being able to accept more breakdown risk. And relying on Lafarge's UK experience in maintaining cement plants in accordance with OEM guidance)	[redacted]	[redacted]	[redacted]
Reduction in operating costs—SNCR ¹⁵ (reductions in the Tunstead plant's variable costs and reductions in material costs as a result of the SNCR capex)	[redacted]	[redacted]	[redacted]
Increased proportion of production from the Tunstead plant (reallocation of volumes to the Tunstead plant from a more expensive plant resulting in variable cost savings)	[redacted]	[redacted]	[redacted]
Reduction in the Tunstead plant's variable costs	[redacted]	[redacted]	[redacted]
Tunstead quarrying benefits identified in geo-mining review	[redacted]	[redacted]	[redacted]
Significant improvements in product quality as perceived by Lafarge Tarmac customers and reduced customer complaints*	[redacted]	[redacted]	[redacted]
Total synergies	[redacted]	[redacted]	[redacted]

Source: Lafarge Tarmac submission to the CC 31 July 2013, Table 3.

*Lafarge Tarmac told us that it had not yet quantified this benefit.

53. The headline estimated figure of around £[redacted] million of synergies to be achievable in 2015 should be read in the context of the site fixed and variable costs at Tunstead being around £[redacted] million in 2012 (see Appendix 13.2, Annex C, Supplement 7, Table 1).
54. In response to our request, Lafarge Tarmac provided further details of how those synergies were expected to be achieved. Based on our assessment of this evidence, nearly all of the expected synergies related to cost savings expected to be made at the Tunstead plant on the implementation of several management and process changes which were identified by a number of different reviews carried out by Lafarge Tarmac, including through benchmarking practices with other plants within Lafarge SA's international network. Lafarge Tarmac told us that there was significant capital cost associated with the full realization of these synergies, notably involving the procurement and implementation of the SNCR.

¹⁵ Lafarge Tarmac told us that SNCR was 'Selective Non-Catalytic Reduction', a post-combustion technology that was designed to control nitrogen oxides emissions from [redacted] by the injection of ammonia or urea that reagents into the flue gas.

55. We did not consider that the changes identified, and any consequent expected savings, hinge on the Tunstead plant being part of Lafarge Tarmac's GB network of plants. Lafarge Tarmac is not the only source of expertise on the efficient operation of a cement plant and, while it is no doubt helpful to Lafarge Tarmac to be able to benchmark domestically (and internationally), this is by no means the only way in which efficiency savings can be identified.
56. Nor do we consider it necessary for a party to run a network of four cement plants in GB to carry out a review to identify potential efficiency improvements. We considered that that expertise is available to other parties, either in-house or sourced from external consultants. Moreover, we would expect the increase in competition that we anticipate to arise from the implementation of our remedies to provide a substantial additional spur to efficiency improvements for all GB cement producers.

Conclusions on the ongoing costs of divestiture

57. We concluded that there might be some ongoing costs of the divestiture of a cement plant which would be relevant to our assessment. These are most likely to relate to duplication of overheads, reductions in purchasing power and/or potential efficiencies that might be lost by Lafarge Tarmac because of the reduction in the size of its network of cement plants.
58. We considered that the estimates provided by Lafarge Tarmac were likely to overestimate substantially the scale and magnitude of such costs and to include a number of costs which were not relevant to our considerations. Taking the evidence before us as a whole, we concluded that these costs were unlikely to exceed around £5 million a year.

Other cement plant divestiture costs that we have considered not to be relevant

59. Lafarge Tarmac and Hanson identified some categories of costs relating to the divestiture of a cement plant which we considered not to be relevant to our assessment of remedies. These covered:
 - (a) costs associated with not being able to meet the demand of existing customers; and
 - (b) costs associated with scaling back the offer of value added products.
60. We consider each in turn below.
61. Hanson submitted that the divestiture of one of its cement plants would mean that it would not be able to service the demand of its existing customers (because of its reduced production capacity). We did not consider this to be a relevant cost of the remedies—the aim of a divestiture remedy would be to create a new entrant in the GB cement market which could credibly compete with Hanson and the other GB cement producers to supply cement to customers in GB. Consequently, there is no reason to expect that Hanson or any other existing GB cement producer would necessarily retain their current customers or market share, which would depend on the outcome of an enhanced competitive process.
62. Lafarge Tarmac submitted that the divestiture of one of its cement plants would limit its ability to provide value added products (VAPs) to its customers throughout the country. It further submitted that the demand for these proprietary products was

increasing and that these products provide significant customer benefits because they saved significant costs through reduced build time or labour requirements.¹⁶

63. We did not consider that this would be a relevant cost for our assessment. Most VAP innovation related to downstream RMX products, and a divestiture of a cement plant would not prevent Lafarge Tarmac from continuing to produce these products if they were in demand. In relation to the potential divestiture of RMX plants which Lafarge Tarmac may be required to make as part of a cement plant divestiture, we consider this when we assess RCBs in Appendix 13.7, Annex C, paragraphs 7 to 13.

Measures to reduce transparency in the GB cement markets

64. We have decided to implement two remedy measures designed to reduce transparency in the GB cement markets as a way of contributing to remedying the coordination AEC. These remedy measures which form part of our proposed package of remedies, are:
- (a) a prohibition on GB cement suppliers sending generic cement price announcement letters to their customers; and
 - (b) restrictions on the publication of GB cement market data.
65. We set out below our assessment of the costs associated with each of these remedy measures.

Prohibition on sending generic cement price announcements

66. Several parties told us that generic price announcement letters were a helpful means for suppliers to provide information to customers about the starting basis for price negotiations (see Appendix 13.4, Annex A):
- (a) Aggregate Industries considered that the use of price announcement letters in general was an efficient way of communicating forecast price increases to customers, and added that they enabled customers to plan ahead for increases in prices.¹⁷
 - (b) Cemex considered that a blanket prohibition on sending generalized price letters to customers would be disproportionate and would create transaction costs for both cement producers and customers.¹⁸
 - (c) Hanson suggested that customers needed to have suitable advance notice of any price increases for business planning purposes (and that the current practice of sending out letters in advance to customers has arisen due to customer requirements).¹⁹
 - (d) CPV (Dragon Alfa) noted that generalized price announcement letters provided an indication of what the GB cement producers wanted to achieve and in turn, what it should be doing with its own prices. It added that it had used the general-

¹⁶ Lafarge Tarmac response to provisional findings and Remedies Notice, paragraphs 254–256.

¹⁷ Aggregate Industries response to Remedies Notice, paragraph 5.2.

¹⁸ Cemex response to Remedies Notice, paragraph 5.8.

¹⁹ Hanson response to Remedies Notice, paragraph 7.10.2.

ized price announcement letters it received in its negotiations with its own customers.²⁰

- (e) Brett Group told us that it found generalized cement price announcement letters helpful and it expected to be written to by cement suppliers with regard to prices going forward.²¹
67. Lafarge Tarmac told us that price announcement letters were still in demand from customers who used them for budgetary and negotiating purposes, but did not oppose the prohibition of generalized letters. It considered that whilst the prohibition of generalized letters would result in some additional administration costs, it would be of benefit to the industry as it would focus cement companies on negotiating individually with their customers.²²
68. However, the following parties did not believe that generalized letters provided a benefit to customers:
- (a) Breedon Aggregates told us that it could not see the ‘customer benefit’ in receiving generalized price announcement letters and would prefer to receive a personalized letter from a particular cement supplier when it was a natural point of the relationship to discuss price rather than receive a generalized price announcement letter along with every other purchaser of cement.²³
- (b) MI (HCM) told us that it could see the ‘customer benefit’ argument of receiving generalized price increase letters but considered the argument rather light.²⁴
69. We did not consider that our remedy would lead suppliers to stop providing information to existing and potential customers on prices that might form the basis for negotiations. As such, we did not expect that, following implementation of this remedy measure, the information provided by suppliers would be any less useful to customers than is currently the case.
70. There might be some minor one-off costs to GB cement suppliers of moving away from using generic price announcement letters as a means of communicating with their customers (eg in setting up systems to send out customer-specific letters). We have not received any estimates of these costs from parties and have no reason to expect them to be significant.

Restrictions on the disclosure of cement market data

71. Most parties, including GB cement producers and other stakeholders in the GB cement markets, told us that they found the cement market data that was currently being published to be of use for a number of reasons, including to assess the overall trend in the market and to support business planning. We were told that this data was also used by private and public entities to assess the UK economy and in particular the construction industry, its market conditions and activity levels, supporting appropriate policy developments, and enabling financial institutions to provide intelligence on the UK market conditions and investment opportunities (see Appendix 13.3). We also consider this when we assess RCBs in Appendix 13.7, Annex D.

²⁰ CPV (Dragon Alfa) response hearing summary, paragraph 20.

²¹ Brett Group response hearing summary, paragraph 19.

²² Lafarge Tarmac response hearing summary, paragraph 38.

²³ Breedon Aggregates response hearing summary, paragraph 20.

²⁴ MI/HCM response hearing summary, paragraph 37.

72. Our proposal to restrict the disclosure of the data would impact on the benefit GB cement producers and other parties derive from the above uses of the data.
73. BIS indicated that the data it published was primarily used for market and economic information by Government and industry bodies, including construction trade associations,²⁵ and that its own investigations indicated that cement data was a good predictor of construction output.²⁶ It added that if the data was embargoed for longer than one month, no forecasting model would be able to use it,²⁷ and that it could not use cement data that was six months old for forecasting construction market performance.²⁸
74. The MPA considered that restricting access to market data except via a Government source would stifle effective market analysis and innovation.²⁹ It believed that the generation of consistent, managed and transparent data was what the Government was trying to encourage and would relieve the administrative burden from government departments.³⁰ The MPA told us that through the enquiries it received as a trade association, from a wide range of stakeholders, journalists and the construction industry, there was demand for more data and a sense of where the market was going, in order to inform investment decisions and business planning.³¹
75. The MPA set out the following ‘pro-competitive benefits’ derived from the published MPA cement and cementitious data, stating that the data:³²
- (a) provided regular and consistent aggregated historic market data to support efficient business planning in the cement and cementitious industries;
 - (b) assisted potential new entrants to the industry and in the supply chain to assess the market;
 - (c) provided timely data to Government and its various agencies and organizations such as the Bank of England, to help assess UK economic and construction market conditions and activity levels to support policy developments;
 - (d) enabled financial institutions to provide intelligence on UK market conditions and investment opportunities; and
 - (e) helped the UK Government and the EU to assess carbon and other emissions against their targets in order to regulate the EU ETS and to monitor progress on a transition to a low carbon economy.
76. Cemex also told us that the publication of MPA and BIS data assisted it with planning its cement production volumes.³³
77. Hanson told us that a time lag in the publication of MPA and BIS data of three months would not unduly affect its planning but a delay up to six months would be damaging to the industry’s ability to allow efficient business and production plan-

²⁵ [BIS response to Remedies Notice](#), paragraph 9.

²⁶ [ibid](#), paragraph 10.

²⁷ [ibid](#), paragraph 11.

²⁸ [BIS response hearing summary](#), paragraph 2.

²⁹ [MPA response to Remedies Notice](#), paragraph 1.4.

³⁰ [MPA response hearing summary](#), paragraph 11.

³¹ [ibid](#), paragraph 12.

³² [MPA response to Remedies Notice](#), paragraph 7.1.

³³ [Cemex response hearing summary](#), paragraph 17.

ning.³⁴ It was also concerned that restricting regional coverage of data would prevent it from making informed decisions regarding logistics of its regional operations.³⁵

78. Brett Group considered that the publication of cement market data was an important part of its knowledge from a procurement perspective in relation to: [REDACTED].³⁶
79. We have considered the loss of the benefit associated with the proposed restrictions on the disclosure of cement market data. As outlined above, most GB cement producers and other parties in the GB cement markets told us that they considered that the time lag we proposed for the publication of the data did not compromise the benefit to them of using the data (see Appendix 13.3).
80. We also considered the cost of this restriction on the other parties that are directly involved in the compilation and publication of the data, MPA and Bessler Hendrie. We saw no reason to expect that this restriction would result in any significant additional costs for either of these parties.

Measures to increase competition in the GGBS supply chain

81. We set out in Figure 13.4 our remedy measures in relation to the GGBS supply chain. The core of this remedy is the divestiture of one of Hanson's active GGBS plants where the current GBS supply agreement in relation to that divested GGBS plant is novated or mirrored, subject to some consequential amendments, to give effect to the divest, to ensure the new owner has access to a sufficient source of GBS.
82. Below, we first set out what parties have told us regarding the costs associated with these remedies. We then assess this evidence and any other costs of these remedies that we consider may be relevant.

Overview of Hanson's comments on the costs of remedies

83. Hanson has provided comments on, and estimates of, the costs associated with the divestment of one active GGBS plant. For the purpose of estimating the costs associated with the divestment of one of its active GGBS plants, Hanson chose to consider, for illustrative purposes and by way of an example, the divestment of the Scunthorpe GGBS plant. [REDACTED]
84. Hanson submitted that the divestiture of one (or more) of its GGBS plants would involve the following costs:³⁷
 - (a) Hanson would incur impairment losses: the divestiture would impair and remove Hanson's ability to make any return on the investment it had made in the Civil and Marine business in 2006. It estimated that potential impairment costs at risk of around £[REDACTED] million. Hanson told us that the size of this impairment would increase if the CC allowed the GBS price to rise through amending the constraints in the existing supply agreements.
 - (b) It would undermine the rationale for the very high level of investment and risk taken by Hanson in the GGBS business: Hanson submitted that it had developed

³⁴ [Hanson response hearing summary, 2 July 2013](#), paragraph 40.

³⁵ *ibid*, paragraph 42.

³⁶ [Brett Group response hearing summary](#), paragraph 20.

³⁷ [Hanson response to Remedies Notice](#), paragraphs 6.30–6.40.

and invested heavily in the GGBS business over a number of years—including a significant capital investment in the establishment and construction of GGBS grinding operations (that represents considerable sunk costs), as well as substantial market investment in promoting GGBS as an alternative to cement in the concrete production process. Hanson submitted that it had made that investment on the basis of the long-term exclusivity granted under the GBS supply arrangements, in order to provide a basic security of supply for entering the cement substitution market. It told us that the exclusivity provided Hanson with the essential security that it could recover its investment. In its view, the long-term period was both required and appropriate in order for Hanson to make the investment, because of the following risks:

- (i) The eventual operators of the GGBS plants would face significant raw material supply-side risks due to the operational uncertainty in the UK steel industry, with any further closures in the steel industry effectively resulting in the end of the national offering of GGBS currently facilitated by Hanson on the basis of the current contractual arrangements.
 - (ii) Demand-side risks faced in trying to promote a substitute to cement, given the relatively low level of acceptance of GGBS at the time of the investments, without risks of other producers free riding on the back of the efforts of Hanson in promoting GGBS.
- (c) Hanson would incur other one-off costs. These would include the costs associated with the sale process itself, the cost of impaired intangible assets (relating to the existing GBS supply agreements), costs associated with the capital investment it would need to make in order to continue serving its internal and external market, [redacted].³⁸ In its response to the provisional decision on remedies, Hanson also submitted that it may face costs of negotiating and drafting new supply agreements for the GGBS facilities it retains, and to protect the viability of the Calumite business on Scunthorpe.³⁹
- (d) A portfolio of plants is essential to allow Hanson to rotate its supply of GGBS around the three plants, and continue a national offering to the market and to independents, where availability of granulates has been threatened. Hanson told us that this would cease upon any divestments as markets would become localized. Hanson submitted that the current arrangements allow for cost, logistical and environmental efficiencies. Hanson also argued that the quality of GBS produced varied across plants and that if the granulate is not of the correct quality, supply to customers can be made from an alternative plant. Hanson told us that it was essential to maintain the quality of the GGBS produced: Hanson mixes the various qualities of GBS available from different plants to ensure both its customers' quantity and quality requirements.

Costs of divestiture of one active GGBS plant

85. We set out below our assessment of the costs associated with the divestment of one active GGBS plant. As with our analysis of the costs associated with the divestiture of a cement plant, we distinguish between:

³⁸ [Hanson response to provisional decision on remedies](#), paragraph 7.9.3, and Annex VII, paragraphs 2.23–2.27.

³⁹ *ibid*, Annex VII, paragraph 2.24.

(a) *One-off costs of divestiture*: costs which are likely to be linked to the running of the divestiture process as well as to the separation of the GGBS network into separate businesses.

(b) *Ongoing costs*: in particular any loss of efficiencies associated with operating a larger network of GGBS plants across GB.

One-off costs of divestiture

86. We considered that the categories of one-off cost outlined in our discussion of the divestiture of a cement plant above were also relevant to our assessment of the one-off costs of divesting one GGBS plant. These cover:
- (a) one-off costs associated with running the divestiture process, eg cost of management time, legal fees, banking fees, cost of a monitoring trustee;
 - (b) one-off costs of separating the assets to be divested from the remaining network; and
 - (c) one-off costs associated with the sale of a GGBS plant below fair market value.
87. The costs associated with running the divestiture process itself include the costs of management time, the legal, banking fees, and the costs of a monitoring trustee.
88. Hanson estimated that the disposal fees it would incur in the divestment of the GGBS plant at [redacted] would be in excess of £[redacted]. Hanson's estimate did not include the monitoring trustee's fees (see paragraph 14(d)).
89. Compared with the costs associated with separating a cement plant from Lafarge Tarmac's network, we expect the cost of separating one GGBS plant from Hanson's remaining network of operations to be significantly smaller as those divisions are generally less integrated with the remaining company than is the case for cement production.
90. Hanson submitted that a GGBS plant divestiture remedy would impair and remove Hanson's ability to make any return on the investment it made in the Civil and Marine business in 2006.⁴⁰ In essence, Hanson's submission is that some of the price it had paid for Civil and Marine's GGBS business had remunerated the original investor for the risk it had taken in setting up the GGBS business, and that any change to the current arrangements would compromise Hanson's ability to recover this investment. Hanson estimates a potential impairment cost associated with the divestment of [redacted] of around £[redacted] million.
91. We note that Civil and Marine's GGBS business was well established at the time that Hanson purchased the business, and therefore the risks that may have been present at the time of the original investment in the business (such as growing the demand for GGBS within GB) are likely to have been much less significant at the time that Hanson purchased the business in 2006. We also note that the technology for using GGBS as a cement replacement has been available since the 19th century and that the use of GGBS for this purpose within GB dates back at least to the Second World

⁴⁰ [Hanson response to Remedies Notice](#), paragraph 6.31.

War and that the specific innovation of grinding the slag separately to create GGBS first began in England in the 1970s.⁴¹

92. To the extent that Hanson had paid a high price for the business because it expected to be able to exercise significant market power as a result of the exclusive rights to produce GGBS in GB, we did not consider any reduction in GGBS profitability (and hence the expected price that could be achieved through divestiture) resulting from a more competitive supply chain as being relevant costs for the purpose of our assessment of remedies.
93. As Hanson noted, some of the value at risk would be recovered through the sale price. However, Hanson told us that it considered it highly unlikely that it would receive fair value for any GGBS plant being divested. In this context, Hanson submitted in response to the CC's provisional decision on remedies that [REDACTED]. We consider that our remedy package, which includes the requirement for Lafarge Tarmac to make available to the buyer of the GGBS plant on a secure and cost-effective basis, will address such risks.
94. Hanson noted several further factors as contributing to a risk that it may not achieve a fair market value on the sale of its GGBS plant: (a) that any purchaser will have limited experience of running a GGBS plant or in marketing GGBS in the UK; (b) that there is a risk of there being few potential acquirers and limited future exit strategies for any such purchaser, possibly in part because of the restrictions imposed by the CC; (c) [REDACTED]; and (d) any limitations of the addressable external market.⁴²
95. Also potentially relevant to this consideration is [REDACTED].⁴³ It would follow from this that a potential purchaser of an individual GGBS plant might view the acquisition as carrying a greater business risk compared with Hanson. If so, this might create a gap between the price a purchaser would be willing to pay for the plant and the value to Hanson of that plant. The relevance of this cost depends on the extent to which there is a risk of closure of a GB steelworks. We assessed the risks associated with closure of a GB steel plant in Appendix 13.5, Annex H, paragraphs 6 to 29, and found that, looking ahead, the risks of major discontinuity of GBS supply were relatively modest.
96. As we discussed in the context of examining the costs relating to the divestiture of a cement plant (see paragraphs 22 to 30), there are a number of factors that could contribute to the cost associated with not achieving a fair value for the divested GGBS plant:
- (a) *Consideration of the number, and type, of potential purchasers.* We have decided to exclude GB cement producers from purchasing the GGBS plant that will be divested.
- (b) *Consideration of time allowed for divestiture to complete.* We are proposing a divestiture period of [REDACTED] months for the GGBS plant divestiture. We considered that this was a sufficiently long period to attract sufficient potential buyers and thereby generate sufficient competitive tension for the plant to enable fair price to be achieved.

⁴¹ Donald W Lewis, PE, Chief Engineer, National Slag Association, History of Slag Cements, presented at University of Alabama Slag Cement Seminar, April 30 1981, p6: www.nationalslag.org/archive/legacy/nsa_181-6_history_of_slag_cements.pdf.

⁴² Hanson response to provisional decision on remedies, Annex VII paragraphs 2.10.3, 2.14–2.15 & 2.17.

⁴³ Hanson response to Remedies Notice.

97. Overall, we took the view that, while there were some risks associated with the divestiture of one GGBS plant, these were capable of being effectively managed during the remedies implementation phase, such that it would be possible for Hanson to obtain a fair market value for divested operations. We noted that GGBS was an attractive alternative to cement for which there was considerable demand. While a purchaser of any divested GGBS operations may not be able to charge as high a price for GGBS as Hanson currently does—as they would be operating in a more competitive environment—we would expect a number of potential purchasers to be attracted by the opportunity to enter this sector which has hitherto not been possible.
98. Hanson told us that it would incur other one-off costs if one of its active plants were divested:
- (a) Hanson would write off an intangible asset on its balance sheet related to the supply agreements for GBS. This asset had a value of [£5–£10] million [redacted].⁴⁴
 - (b) Hanson would incur costs associated with negotiating and drafting new supply agreements for GBS at the facilities it retained, and to put in place arrangements to protect [redacted].
 - (c) Hanson submitted that it would [redacted].⁴⁵
 - (d) Hanson told us that it anticipated some tax costs on the proceeds of the sale of any of its assets.⁴⁶ The amount would depend on the price, terms and timing of the sales. It expected the proceeds of the sale to be effectively taxed [redacted].
 - (e) Hanson told us that, following a sale of [redacted], over the longer term, if the GGBS market recovered in growth, it would need to [redacted] and would need to incur capital investment in doing so.
99. We consider the relevance of each of these items of costs put forward by Hanson:
- (a) We did not consider the writing-off from the balance sheet of the intangible asset relating to the existing GBS agreements was necessarily a relevant cost in our consideration. To the extent that this represents a loss in the ability of Hanson to charge prices above competitive levels, this appears to constitute a desirable outcome of the remedy rather than a cost to which we should have regard. In addition, we expect that Hanson would continue to have its long-term supply arrangements in relation to the GGBS plants that it would retain and that intangible assets associated with such arrangements would therefore remain after our remedies are implemented. It is also relevant to note that we have structured our remedy to ensure that the buyer of the divested GGBS plant will have security of supply in relation to its GBS, through its own GBS agreement with Lafarge Tarmac. We expect the value associated with this security to be reflected in the sale price of the divested plant, mitigating any possible loss to Hanson associated with writing off the value of its intangible assets relating to the GBS supply agreements.
 - (b) We consider that the costs that Hanson would incur, to make the consequential amendments to its existing GBS supply agreements, to give effect to the GGBS remedy, were potentially relevant costs for the CC to take into account. Hanson did not quantify this cost. Given the approach that we are taking to this remedy,

⁴⁴ [Hanson response to provisional decision on remedies](#), Annex VII, paragraph 2.23.

⁴⁵ *ibid*, Annex VII, paragraph 2.25.

⁴⁶ *ibid*, Annex VII, paragraphs 2.26 & 2.26.2.

we consider it likely that the figure would be significantly less than the cost of legal advice and management time incurred by Hanson in relation to the disposal of the assets, which Hanson estimated to be around £[§] million.

- (c) We consider that the cost associated with moving Hanson's [§], point (c) above, is relevant in our consideration provided it is necessary for Hanson that the work currently done at the [§] continues to be done. Hanson estimated that the cost [§]—infrastructure and personnel—could be in the region of £[§] million.
- (d) We consider it reasonable to take account in our assessment of the costs of the remedies, the costs that Hanson will incur with the tax on the proceeds of the sale, as the divestiture would require Hanson to conduct the sale process within a timetable determined by the CC and hence crystallize any tax liabilities. Hanson put forward a conservative lower bound for the tax costs of £[§] million.
- (e) Hanson has noted that, following the divestment of one of its GGBS plants, it may, over the longer term, need to invest to [§] if the GGBS market grows. We did not consider that such further investment was an inevitable consequence of our remedy; it would be for Hanson to decide, depending on the business case for it, on whether and how to expand capacity in the event that the GGBS market were to grow.

Conclusions on one-off costs

- 100. We concluded that the one-off costs associated with the divestiture of one active which are relevant to our assessment relate principally to the costs of separation and to the costs of carrying out the divestiture process. Taking the evidence as a whole, we considered that these one-off costs could be in the region of around £10 million.
- 101. While there are some risks associated with the divestiture of the GGBS plant which might have an impact on the sellers' ability to get a fair market value, we considered that these were capable of being effectively managed during the remedies implementation phase.

Ongoing costs of divestiture

- 102. Potential ongoing costs associated with the divestiture of one GGBS plant relate to the potential loss in efficiencies and of margins that Hanson currently enjoys as a result of the existing structure.
- 103. Hanson has submitted that there are a number of significant relevant customer benefits created by efficiencies because it is the sole producer of GGBS in GB:⁴⁷
 - (a) Hanson submitted that a portfolio of plants allowed it to rotate its supply of GGBS around its three plants, where availability of granulates (GBS) had been threatened. Hanson told us that any divestment or other form of interference would end the current offering of national supply to independents, resulting in smaller localized offerings with less efficiency and higher risk and cost, and an end to the national market. Hanson also argued that the quality of GBS produced varied according to each particular plant and that if the granulate was not of sufficient quality, it currently blended the GBS from across plants, as well as blended with

⁴⁷ [Hanson response to Remedies Notice](#), paragraph 6.39.

high-quality GBS imported from abroad, to produce GGBS of the requisite quality. Hanson submitted that this allowed for cost, quality and environmental advantages.

- (b) Hanson submitted that a single supplier of GB-produced GGBS was required in order to undertake the investment, and make the commitment necessary, to promote the benefits of GGBS such as its environmental advantages. Hanson told us that it was only the experience gained by Hanson from years of investment that made GGBS a viable product for cement substitution.
104. We consider each of these points in turn.
105. Customers are currently able to switch between cement providers, and we considered that customers would be similarly able to switch from one GGBS supplier to another if more than one GGBS supplier operated in the market and if one particular GGBS supplier faced difficulties in supplying GGBS. We therefore did not consider that there were any benefits to customers from Hanson being able to swap production from one GGBS plant to another to remedy potential shortages in the supply of GBS at a particular plant. We note that these are the benefits which can be obtained through the normal process of competition between suppliers of a given product. We also consider this when we assess RCBs in Appendix 13.7.
106. A separate point raised by Hanson was that the access to more than one source of GBS allowed Hanson to blend GBS across plants. Hanson has told us that this allowed it to blend lower quality GBS from a steelworks with high quality GBS from another plant, or imported from Mittal Ghent abroad, to ensure that the resulting GGBS is of the requisite quality. We did not consider this to be relevant for our assessment of the remedies as we found no reason why, following the implementation of the remedies, Hanson should not be able to procure the required quantities and qualities of GBS to would ensure that the resulting GGBS was of the required quality.
107. Hanson also raised the point that holding a portfolio of GGBS plants allowed Hanson to benefit from cost, logistical and environmental efficiencies, and that some of these would be lost if one of its plants were divested.
108. We envisage that there might potentially be some ongoing costs and/or efficiency losses with respect to:
- (a) obtaining worse conditions from suppliers on the purchase of raw materials, energy, fuel and freight as a consequence of its reduced purchase of these goods and services;
 - (b) higher distribution costs due to Hanson having a reduced network of GGBS plants from which to service its internal needs, as well as external customers;
 - (c) the loss to Hanson related to running the retained operations at lower margins; and
 - (d) a reduction in Hanson's flexibility to plan production across a larger number of GGBS plants, including possible increased maintenance costs.
109. In relation to point (a), we note that around [X] per cent of the variable costs associated with Hanson's GGBS activities at Purfleet are for the purchase of GBS whilst at Scunthorpe and Port Talbot, purchases of GBS account for around [X] per cent of variable costs (see Appendix 13.5, Annex E, Supplement 5, Table 3). The importance of GBS as an input to Hanson's GGBS activities is consistent with Hanson's

concern that ‘without comfort on the terms and longevity of GBS supply ... the bargaining power relative to GBS operator(s) will be fundamentally reduced. If the GBS operators choose to put up prices, Hanson’s GGBS business [REDACTED].^{48,49} We consider that the worsening of terms and conditions obtained from suppliers is unlikely to be significant. We do not share Hanson’s concerns that GBS costs might rise given the approach that we propose for the supply of GBS. We have seen no evidence to suggest that unit costs of other inputs—namely of energy and of other raw materials—would materially increase following divestiture.

110. Hanson submitted that it would incur an additional annual cost relating to additional distribution costs that would arise from not being able to source the GGBS from [REDACTED]. It estimates that the additional distribution costs to supply its internal needs would be £[REDACTED] a year, and the additional distribution costs to service external customers would be £[REDACTED] a year; for the purpose of that calculation, Hanson assumes that it would continue to serve those existing external customers [REDACTED]; this equates to Hanson assuming it would retain around [REDACTED] of its existing external customers. Hanson submitted that the additional distribution costs would reduce if and when the market recovered enough [REDACTED].
111. Hanson also submitted that the margins earned on its retained operations would be below its current ones, and that this represented a cost to it of the divestment. Hanson told us that the impact of lost margins on internal sales would be £[REDACTED], and that the margins lost on external sales would be £[REDACTED] a year.
112. We recognize that, following divestiture of one of its GGBS plants there may be some costs for Hanson associated with having less flexibility to manage production across its plants, for example to interrupt production at one plant for maintenance purposes, or associated with Hanson having to source GGBS from a more distant plant than would otherwise be the case.
113. In considering the potential loss of efficiencies derived from operating a network of GGBS plants, we note that Hanson currently has five GGBS plants in total, of which three are currently active. We also noted that Hanson may decide to reactivate its mothballed GGBS plant at Teesport, such that Hanson would be able to retain a network of three GGBS plants should it wish to do so following the divestiture of one of its active GGBS plants.
114. We also note that GBS supply considerations may introduce some complications in relation to how Hanson manages its remaining network of GGBS plants, in particular given the co-location of two GGBS plants with their respective local GBS plants. Our proposed GGBS plant divestiture remedy would result in Hanson not being able to supply customers with GGBS from one plant, but it would not prevent the new owner of the divested GGBS plant from supplying these customers with GGBS. Therefore, we expect that the scenario described by Hanson might result in encouraging GGBS customers to source GGBS from both GGBS providers. We considered that a greater prevalence among GGBS customers of multi-sourcing their GGBS would encourage GGBS producers to offer keener and more competitive prices. Therefore, from a customer perspective, we concluded that this argument might highlight a potential cost for Hanson, but its overall effect on GGBS customers (particularly external customers) is likely to be neutral or beneficial. We did not consider that it is relevant for us to take into account any additional costs that Hanson might incur, if it chose to supply all of its own requirements of GGBS internally, as it would also have the

⁴⁸ [Hanson response to provisional decision on remedies](#), Annex VII, paragraph 3.12.

⁴⁹ *ibid*, Annex VII, paragraphs 3.14 & 4.1. Hanson made this point when commenting on the potential divestiture of two of its GGBS plants, as was considered in the provisional decision on remedies.

option of sourcing from the acquirer of the divested plant, if this were a more efficient arrangement.

115. [X] We noted that GGBS is now well established as a cement substitute in GB. To the extent that the different operators of the GGBS plants intend to promote GGBS in general, we see no reason why they would not be able to do so just as effectively. In any event, the figures from the Profit and Loss information for Hanson's GGBS operations showed that expenditure on marketing accounted for at most [X] per cent of total costs in 2007 but accounted for less than [X] per cent of total costs since, dropping below [X] per cent in 2011 and 2012.⁵⁰ In its response to our provisional decision on remedies, Hanson provided the CC with information on marketing spend directly related to GGBS since 2010. The expenditure varies, from £[X] in 2012 to £[X] in 2011, when Hanson undertook an exercise to rebrand its GGBS product under the name Regen.⁵¹ We therefore did not consider that this represented a significant cost.
116. We concluded that there could be some ongoing costs to Hanson associated with losing efficiencies associated with all three of its currently active GGBS plants. We did not consider such costs likely to exceed £2 million a year and noted that these would not necessarily involve an overall loss of efficiency for the market or result in harmful effects on GGBS customers.

Conclusions on the costs of divestiture of a GGBS plant

117. We considered that Hanson would face some one-off costs associated with the divestiture of one of its GGBS plants which would be relevant to our assessment. On the basis of the evidence available, we considered that these one-off costs could be in the region of £10 million (see paragraph 32).
118. We considered that ongoing costs of divesting one GGBS plant are not likely to exceed £2 million a year and noted that these would not necessarily involve any overall loss of efficiency for the market or result in harmful effects on GGBS customers.

⁵⁰ The figures are the share of total costs accounted for by the cost item labelled 'Divisional General and Administration costs and sales and marketing' of GGBS profit and loss account. This item includes marketing as well as non-marketing costs, so that the figures given are an overestimate of the share of total costs that correspond to promotional activities.

⁵¹ [Hanson response to provisional decision on remedies](#), Annex VII, Table 3.

Analysis of the NPV of the net benefit of our remedies

1. This appendix sets out analysis on the potential NPV of the net benefit (ie benefits net of relevant costs) associated with (a) the cement plant divestiture and transparency-reduction measures, and with (b) the divestiture of one GGBS plant.
2. For each, it sets out a base case scenario and then examines the sensitivity of our estimate of the net benefit to the assumptions or estimates made with regard to:
 - (a) the estimate of the one-off and of the ongoing costs of the remedy;
 - (b) the estimate of the ongoing benefit of the remedy; and
 - (c) the time horizon we are considering.
3. We consider first the cement plant divestiture and transparency-reduction measures, and we then consider the divestiture of one GGBS plant.

Cement plant divestiture and transparency-reduction measures

4. We compute the NPV of the costs and benefit associated with these remedies by setting an estimate of the discounted flow of the annual costs of the remedies against an estimate of the discounted flow of annual benefits. We first set out the estimates and assumptions that define our base case. We then present the results of our analysis of how the estimated net benefit of the relevant remedies varies when we depart from that base case scenario.

Base case

5. In Appendix 13.9, we identified the one-off costs and the annual ongoing costs associated with the divestment of one cement plant from Lafarge Tarmac. Based on the evidence currently available, this suggested that:
 - (a) one-off costs of a cement divestiture could be in the region of £10–£20 million; and
 - (b) ongoing costs of a cement divestiture are unlikely to exceed £5 million a year.
6. We do not expect one-off or ongoing costs of the transparency-reduction measures to be material.
7. In paragraph 13.452 we set out our view that a figure of around £30 million a year would represent a very conservative estimate of the likely benefits of implementing these measures.
8. To calculate the NPV associated with these remedies, we have made a number of other assumptions, concerning the timing of the flow of costs and benefits and the discount rate to use:
 - (a) *Timing of one-off costs.* We assume that the one-off costs are incurred over the first two years from when our final report is published, split equally between the two years.

- (b) *Timing of ongoing costs.* For the purposes of this exercise, we assume that the ongoing annual costs of the remedies are incurred in full each year from two years after our final report is published. We take £5 million as our current estimate of these costs, on a conservative basis, as we do not expect these costs to exceed this amount.
- (c) *Timing of benefits.* We assume there is a glide path for the benefits of our remedy to materialize:
- (i) no benefit in the first three years after our report is published. This is conservative, as we would expect some benefits of these remedies to accrue before this;
 - (ii) one-third of our estimate of the annual benefit in the fourth year after our report is published (ie £10 million based on our base case estimate of £30 million);
 - (iii) two-thirds of our estimate of the annual benefit in the fifth year (ie £20 million based on our base case estimate of £30 million); and
 - (iv) all of our estimate of the annual benefit in each year after that (ie £30 million).
- (d) *Time horizon.* We have used a 30-year time horizon for our analysis.
- (e) *Discount rate.* We assume a 3.5 per cent real discount rate, in line with HM Treasury's Green Book.¹

9. Our estimates of the annual benefit and of the ongoing costs (£30 million and £5 million respectively in our base case) are based on current values. We consider that these benefits and costs would be likely to change over time in line with inflation. As such, we consider it reasonable to treat those figures as if in real terms. Accordingly, our estimate of the NPV of the net benefit should also be interpreted in real terms, and hence there is no need to adjust value for inflation and to use nominal discount rates rather than a real discount rate.
10. Based on the estimates and assumptions described above, Table 1 sets out our base case estimate of the NPV of the net benefit associated with these measures. We present the calculation for the case where the one-off costs are £10 million, and for the case where the one-off costs are £20 million; this is the range of values we consider to be in our base case scenario.

TABLE 1 NPV of estimated benefits and costs of proposed measures: 30-year time horizon

	One-off costs £ million	
	10	20
NPV of benefits	457	457
NPV of costs	95	105
NPV of net benefits	362	352

Source: CC analysis.

Note: Assumes ongoing annual costs of £5 million and ongoing annual benefits of £30 million.

¹ HM Treasury 'Green Book: Appraisal and Evaluation in Central Government', paragraphs 5.48–5.53.

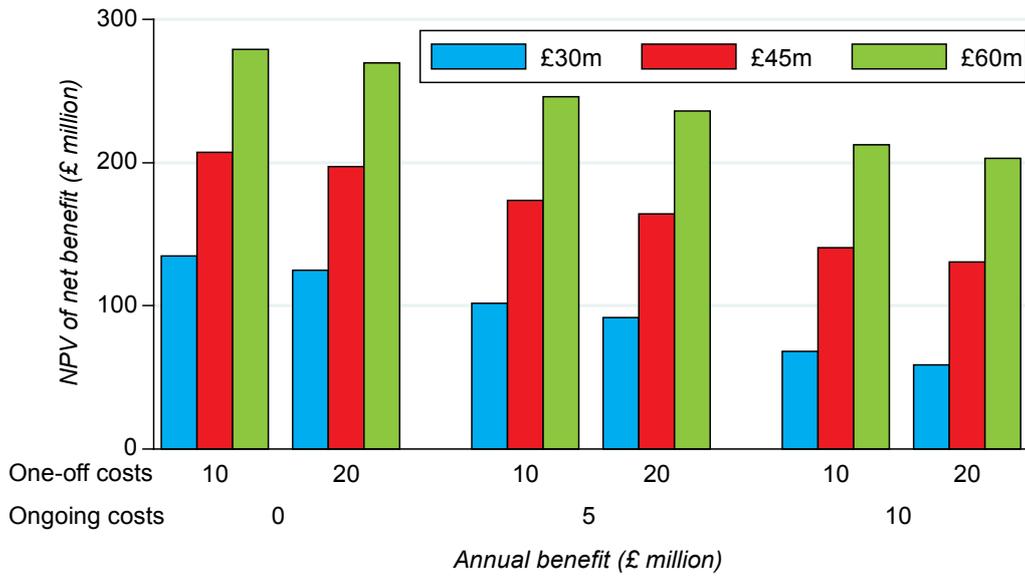
Sensitivity analysis

11. We next examined the sensitivity of our estimate of the NPV of the net benefits of our proposed remedy to variations in our estimates of costs and benefits and to variations in the assumption made on other elements of the calculation.
12. To carry this out we considered three possible values for the estimate of the one-off costs, of the ongoing costs and of the ongoing benefits:
 - (a) *One-off costs*: £10 million or £20 million, as in our base case.
 - (b) *Ongoing costs*: £0, £5 million or £10 million. We considered higher and lower values of ongoing costs than the £5 million figure used in our base case scenario.
 - (c) *Annual benefit*: £30 million, £45 million or £60 million. As we judged that the £30 million figure was a conservative estimate of benefits, we considered higher sensitivities to reflect the possibility that prices and profits—and hence the detriment arising from coordination—would rise further in the event of a sustained economic recovery.²
13. We constructed 18 different scenarios, reflecting the 18 possible ways in which the different possible assumptions about the one-off costs, ongoing costs and annual benefits can be combined ($2 \times 3 \times 3 = 18$).
14. We computed the NPV of the net benefit for each of those 18 scenarios. We repeated these calculations three times, considering different time horizons each time: a 10-year, a 20-year and a 30-year time horizon.
15. For the purpose of the analysis, the estimates were not particularly sensitive to the assumption we made about the discount rate.
16. The results of this work are shown in the figures below.

² We consider that, if the sector moves forward towards recovery, it is reasonable to examine a scenario where the GB cement producers enjoy profit levels that are 10 per cent higher than the average 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 well within the levels in the industry over the last three years. The level of excess profit associated with the excess 3.7 per cent return would be around £44.3 million, rounded to £45 million in our sensitivity analysis. If the producers were to enjoy profit levels that are 20 per cent higher than the average over 2007–2012, 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 2010–12, the last three years covered by our profitability analysis (see Appendix 8.6, Table 1).

FIGURE 1

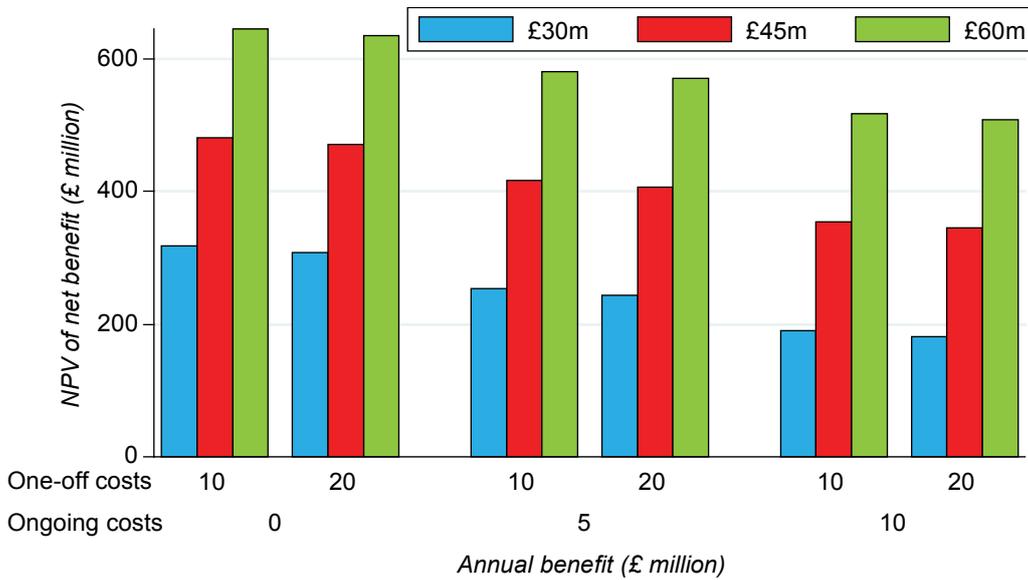
NPV of estimated net benefits: 10-year horizon



Source: CC calculations.

FIGURE 2

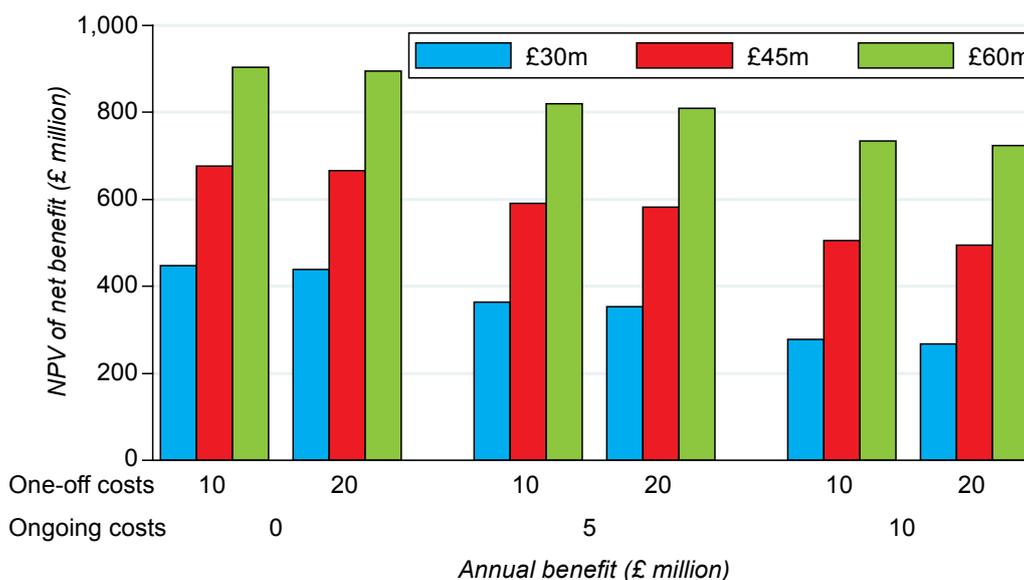
NPV of estimated net benefits: 20-year horizon



Source: CC calculations.

FIGURE 3

NPV of estimated net benefits: 30-year horizon



Source: CC calculations.

17. The figures above show that the NPV of the estimated net benefits are positive and substantial in all of the scenarios we considered.

Divestiture of a GGBS plant

18. This section sets out our analysis of the NPV of the costs and benefit associated with our remedy involving the divestiture of a GGBS plant. It follows the same structure as our consideration of the cement plant divestiture and transparency-reduction measures: we first set out the findings for our base case, and then examine how our estimate of the net benefit of the remedy varies when we depart from that base case scenario.

Base case

19. In Appendix 13.9, we identified the one-off costs and the annual ongoing costs associated with the divestment of a GGBS plant from Hanson. Based on the evidence currently available, this suggested that:
 - (a) one-off costs of a GGBS plant divestiture could be in the region of £10 million; and
 - (b) ongoing costs of a GGBS plant divestiture are unlikely to exceed £2 million.
20. In paragraphs 8.493 and 13.475 we set out our estimate that the potential benefits of a more competitive market for GGBS would be around £15–£20 million a year.
21. To calculate the NPV associated with these remedies, we have made a number of other assumptions, concerning the timing of the flow of costs and benefits and the discount rate to use:

- (a) *Timing of one-off costs.* We assume that the one-off costs are incurred over the first two years from when our final report is published, split equally between the two years.
- (b) *Timing of ongoing costs.* For the purposes of this exercise, we assume that the ongoing annual costs of the remedies are incurred in full each year from two years after our final report is published.
- (c) *Timing of benefits.* We assume there is no benefit in the first two years after our report is published, and that all of our estimate of the annual benefit is realized in each year after. We expect that two years will be around the time needed to implement the remedies and for the ensuing benefits to materialize.
- (d) *Time horizon.* We have used a 15-year time horizon for our analysis.
- (e) *Discount rate.* We assume a 3.5 per cent real discount rate, in line with HM Treasury's Green Book.³
22. Our estimates of the annual benefit and of the ongoing costs (£15–£20 million and £2 million respectively) are based on current values. We consider that these benefits and costs would be likely to change over time in line with inflation. As such, we consider it reasonable to treat those figures as if in real terms. Accordingly, our estimate of the NPV of the net benefit should be interpreted in real terms too, and hence there is no need to adjust value for inflation and to use nominal discount rates rather than a real discount rate.
23. Based on the estimates and assumptions described above, Table 2 sets out our base case estimate of the NPV of the net benefit associated with these measures. In these calculations we have taken the one-off costs to be £10 million and the ongoing annual costs to be £2 million (see paragraph 19). We present the calculation for the case where the annual benefits are £17.5 million, the midway point in the range of our estimated benefits.

TABLE 2 NPV of estimated benefits and costs of proposed measures: 15-year time horizon

	£ million
NPV of benefits	174
NPV of costs	30
NPV of net benefits	144

Source: CC analysis.

Note: Assumes one-off costs of £10 million, ongoing annual costs of £2 million and ongoing annual benefits of £17.5 million. Figures do not add up because of rounding.

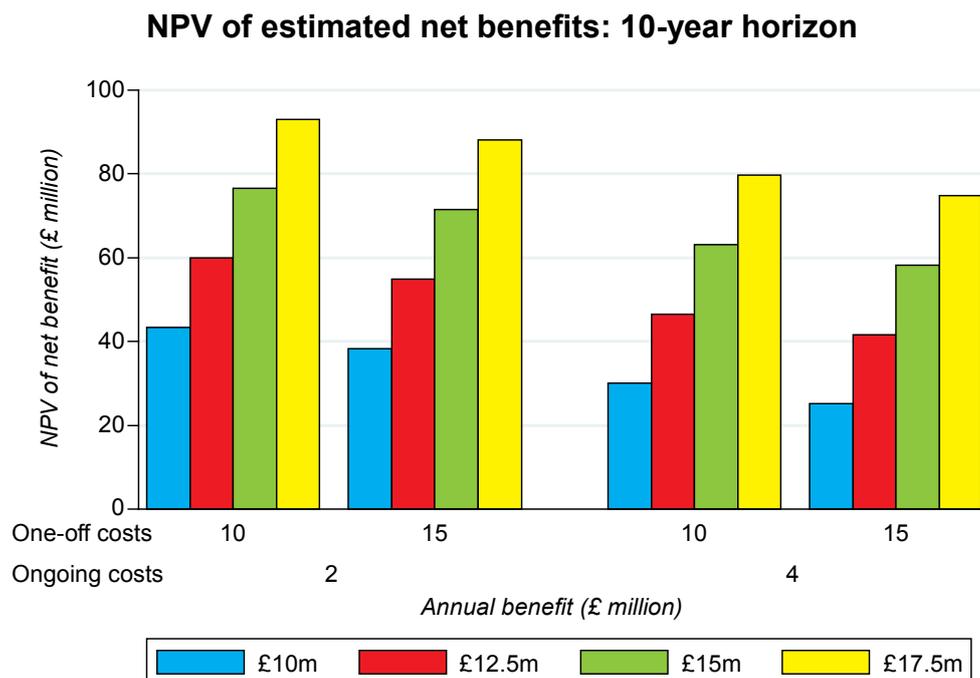
Sensitivity analysis

24. We next examined the sensitivity of our estimate of the NPV of the net benefits of our proposed remedy to variations in our estimates of costs and benefits and to variations in the assumption made on other elements of the calculation.
25. To carry this out we considered different values for the estimate of the one-off costs, of the ongoing costs and of the ongoing benefits:

³ HM Treasury 'Green Book: Appraisal and Evaluation in Central Government', paragraphs 5.48–5.53.

- (a) *One-off costs*: £10 million or £15 million. We considered higher one-off costs than the £10 million figure used in our base case scenario.
 - (b) *Ongoing costs*: £2 million or £4 million. We considered higher ongoing costs than the £2 million figure used in our base case scenario.
 - (c) *Annual benefit*: £10 million, £12.5 million, £15 million or £17.5 million. We considered lower annual benefits to reflect the possibility that not all detriment is removed.
26. We constructed 16 different scenarios, reflecting the 16 possible ways in which the different possible assumptions about the one-off costs, ongoing costs and annual benefits can be combined ($2 \times 2 \times 4 = 16$).
 27. We computed the NPV of the net benefit for each of those 16 scenarios. We repeated these calculations three times, considering different time horizons each time: a 10-year, a 15-year and a 20-year time horizon.
 28. For the purpose of the analysis, the estimates were not particularly sensitive to the assumption we made about the discount rate.
 29. The results of this work are shown in the figures below.

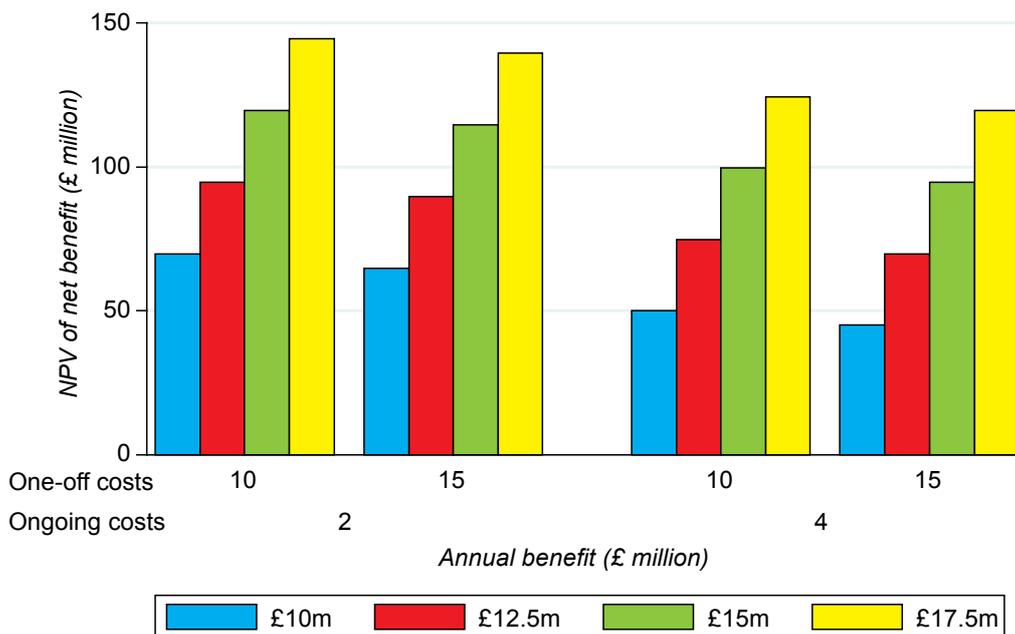
FIGURE 4



Source: CC calculations.

FIGURE 5

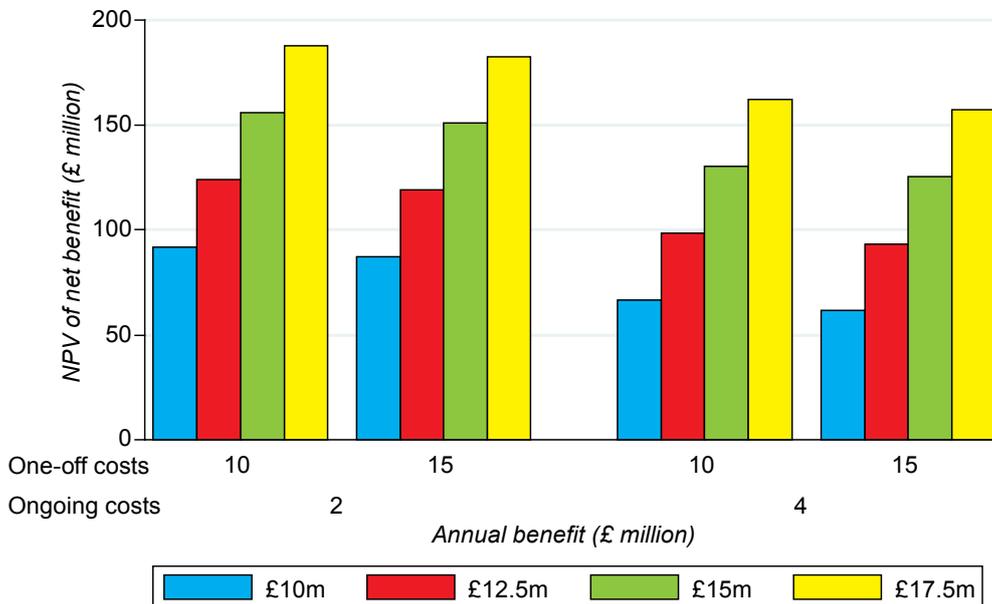
NPV of estimated net benefits: 15-year horizon



Source: CC calculations.

FIGURE 6

NPV of estimated net benefits: 20-year horizon



Source: CC calculations.

30. The figures above show that the NPV of the estimated net benefits are positive and substantial in all of the scenarios we considered.

Glossary

80% catchment area	The distance from production sites within which 80 per cent of external customer volumes are delivered.
Act	The Enterprise Act 2002.
Aggregate Industries	Aggregate Industries UK Limited, the UK operations of Holcim Limited, a global building materials producer, which is listed on the SIX Swiss Exchange. Aggregate Industries produces and supplies a wide range of construction materials in the UK, including aggregates , asphalt , RMX and precast concrete products, as well as importing and supplying cement and providing a national road surfacing and contracting service.
Aggregates	The granular base materials used (including as a constituent of RMX) in the construction of roads, buildings and other infrastructure, including primary aggregates , secondary aggregates and recycled aggregates .
Anglo American	Anglo American plc. With a primary listing on the London Stock Exchange, Anglo American was the ultimate parent company of Tarmac . On 7 January 2013 Anglo American entered into a JV with Lafarge Group called Lafarge Tarmac in relation to its UK construction materials business, including its activities in the production of cement , aggregates , asphalt and RMX . Anglo American holds 50 per cent of Lafarge Tarmac .
Asphalt	Produced from aggregates and a viscous binding agent, usually bitumen, and primarily used in asphalt surfacing and maintenance activities.
AWP	Aggregates working party. One of several technical working parties set up on a regional basis as part of the MASS , whose core members are drawn from both government bodies and industry representatives. Their primary purpose is to provide technical advice to local planning authorities in relation to the apportionment of aggregates demand to regional and local areas.
BAA	British Aggregates Association. A trade association for aggregates producers.
Base (surveys)	The base shown on any outputs or reported figures from survey information is the total number of responses on which quoted statistics are calculated (based).
BDS	BDS Market Research Limited, a source of market data on (among other things) aggregates and RMX .
BFS	Blast furnace slag, a by-product produced from an iron blast furnace.
BL&C	Buxton Lime and Cement, Tarmac's lime and cement company. BL&C is based in Buxton and comprises a quarry and stone plant, a lime plant and a cement plant.

Breedon Aggregates	Breedon Aggregates Limited.
Brett Group	Robert Brett & Sons Limited.
Carbon allowance	An EU Allowance or EUA relating to the EU ETS . One carbon allowance permits an ETS installation to emit 1 tonne of CO ₂ or CO ₂ equivalent emissions. See also carbon emissions .
Carbon emissions	CO ₂ emissions or any other greenhouse gas emissions regulated by the ETS .
CC	Competition Commission.
CCA	Current cost accounting. A system of accounting which consistently applies value to the business valuation principles to assets and liabilities.
CCAg	Climate Change Agreement. A voluntary agreement entered into with the Government by an industrial sector. Under the sector 'umbrella agreement' any operator (that meets the eligibility criteria) in certain energy-intensive industries can enter the sector agreement. The participation in a sector climate change agreement by an operator requires the operator to have an 'underlying' climate change agreement with the Government which contains targets for improving the business's energy efficiency performance. Once these targets are met, the business will benefit from a discount on its CCL . Cement /clinker production, slag grinding (eg GGBS) and lime production are sectors which have entered into CCAgs with the Government.
CCL	Climate Change Levy. A tax levied on the use of energy above a certain threshold in industry, commerce and the public sector.
CEM I, CEM II, CEM III, CEM IV, CEM V	Types of grey cement . CEM I 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 contains between 6 and 35 per cent PFA , limestone or GGBS . CEM III contains between 36 and 95 per cent GGBS . CEM IV contains higher proportions of pozzolana than in a CEM II cement. CEM V is a composite cement ; comprising Portland cement and combinations of BFS and pozzolana or fly ash .
Cembureau	The European trade association for cement based in Brussels.
Cement	Also referred to as 'Portland cement' or grey cement. Produced from a mixture of finely ground limestone or chalk, clay and sand, which is heated almost to melting point (around 1,450°C) in a large rotating kiln. The cement clinker that emerges is then ground to a fine powder or combined with other cementitious products to produce different grades of product. It is used as a binder in building materials including RMX . It can be supplied either in bulk or bagged. There are three main types or grades of grey cement: CEM I , CEM II and CEM III .

Cementitious material	Any of various building materials which are capable of a hydraulic reaction with water to form a solid crystalline structure. Includes cement and GGBS . See also pozzolanic material .
Cementitious products	Substances which can be added to cement made from clinker to create different types cement such CEM II and CEM III . As used in this report, this term encompasses cementitious materials, pozzolanic materials and materials (such as limestone) which have little cementitious or pozzolanic properties.
Cemex	Cemex UK Operations Limited, the UK operations of Cemex SAB de CV, the global building materials company which is listed on the Mexico stock exchange. Cemex produces, distributes and sells cement, asphalt, RMX and aggregates in GB .
Chemical stone	See high purity limestone .
Concrete	A building material consisting of a mix of aggregates, cement and water. See also RMX .
Consolidated	Relating to the Majors' combined relevant GB operations level.
Construction aggregates	Aggregates used for construction purposes, whether directly in construction without further processing (eg as sub-bases and fills) or as inputs to other building materials such as RMX and asphalt .
Correlation coefficient	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.
Cost of capital	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 the yield on capital employed in the next best alternative use.
CPV	Cementos Portland Valderrivas SA. CPV's UK operations comprise Dragon Alfa and Southern Cement . Southern Cement was acquired by CRH Group on 26 February 2013.
CRC	Carbon Reduction Commitment. A UK Government energy efficiency scheme.
CRH	CRH (UK) Ltd, owner of Premier Cement .
CRH Group	CRH plc, ultimate parent company of Premier Cement . CRH Group acquired Southern Cement from CPV on 26 February 2013.

Crushed rock	Primary aggregates made from crushing rock. In addition to high PSV aggregates (such as granite and gritstone), crushed rock aggregates include softer limestone and other rock types.
DCLG	The Department for Communities and Local Government.
DECC	The Department of Energy and Climate Change.
Defra	The Department for Environment, Food and Rural Affairs.
Delivered price	The price that comprises the ex-works price and the cost of haulage.
DG COMP	The European Commission Directorate General for Competition.
Diversion ratio	The proportion of customers lost by one supplier that switch to a competing provider.
Dragon Alfa	Dragon Alfa Limited.
Dry process	A cement manufacturing process in which the feed material for the kiln is in dry powdered form. The moisture content of the raw material is the main criterion governing whether a dry process , semi-wet/semi-dry process or wet process is used.
Dudman Group	Dudman Group Limited.
E&EA	Entry and exit analysis.
EA	The Environment Agency.
EBITDA	Earnings before interest, tax, depreciation and amortization.
Economic costs	The costs of resources used at a price they would be traded at in a highly competitive market, where entry to and exit from the market is easy. The value of resources consumed and assets utilized should reflect their current value to the business , not their historical cost. We also refer to this as the continuing cost of supply.
EIA	Environmental Impact Assessment. The EU 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.
EPR	Economic Planning Region. The highest tier of subnational division used by the UK Government for economic planning purposes.
ETS	The Emissions Trading System, introduced on 1 January 2005 by the EU to help meet its greenhouse gas emissions targets under the Kyoto Protocol. The ETS currently operates in 31 countries. The ETS is a 'cap-and-trade' system of pollution control, which uses tradable carbon allowances to limit and reduce carbon emissions produced by its energy-intensive

industry sectors and electricity generators. Clinker and **lime** plants are installations which are covered by the ETS.

EU	European Union.
Ex-works price	Price per unit of measure based on net revenues (gross revenues less distribution and haulage charges) divided by sales volumes. The ex-works price is the price paid by the customer before distribution and haulage charges are added on. See also delivered price .
FCM	Financial capital maintenance.
FGD	Flue gas desulphurization. The process by which sulphur in waste gases from power stations is reduced. High purity limestone is used in powder form, which is then made into a slurry to desulphurize the flue gases. In order to produce the powder, limestone is crushed at the quarry site and then ground by the power stations.
Fly ash	A general term for ash from power stations. See also PFA .
FOB price	'Free on board' price—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.
FRS	Financial Reporting Standards.
FY	Financial year ended/ending.
GB	Great Britain.
GBS	Granulated blast furnace slag. A cementitious granulate material made by water-cooling BFS . GBS can be ground to produce GGBS .
GGBS	Ground granulated blast furnace slag. GGBS is a by-product of the blast furnaces used to make iron and is a cementitious material . It can be used as a supplementary cementitious product (where it can replace up to 70 per cent of cement in a concrete mix). Hanson is the only supplier of UK-produced GGBS in the UK. See also CEM I , CEM II , CEM III .
Grade	The size of aggregate particles. Typical grade categories are: — 'Fine': aggregate with a particle size of less than 5mm. — 'Coarse': aggregate with a particle size of more than 5mm. — 'Granular': aggregate containing a mixture of coarse and fine material.
Granulator	Equipment to water-cool BFS to produce GBS .
Grinding station	A site at which no cement clinker is manufactured, but at which clinker (purchased or transferred in from elsewhere) is ground and blended (with the addition of gypsum , limestone , PFA and GGBS) to produce cement .

Gross revenues	Gross revenues equal the delivered price per unit multiplied by the total unit sales volumes. See also delivered price and net revenues .
Guidelines	The CC 's guidelines on the conduct of market investigations (<i>Market Investigation References: Competition Commission Guidelines, CC3 (Revised)</i> , 5 April 2013), available on the CC's website at www.competition-commission.org.uk/assets/competitioncommission/docs/2013/publications/cc3_revised.pdf .
Gypsum	A very soft mineral composed of calcium sulphate dihydrate. In the production of cement , clinker is ground with a small amount of gypsum to control the initial rate of reaction with water, allowing concrete made from the cement to be placed and compacted before setting commences.
Hanson	The UK construction and building materials businesses of Hanson and HeidelbergCement AG—Hanson's ultimate parent company, a global provider of building materials listed on a number of German stock exchanges. Hanson supplies heavy building materials to the UK construction industry, including aggregates, asphalt, RMX and cement , as well as specialist services in contracting and civil engineering.
HCA	Historical cost accounting. A system of accounting which values assets and liabilities at their historical cost.
HCM	Hope Construction Materials. MI 's UK cement, concrete, aggregates and asphalting business, created on 7 January 2013 from assets that the CC required Anglo American and Lafarge to divest as a result of the CC 's inquiry into their proposed construction materials JV in the UK.
High-purity limestone	A type of limestone with a calcium carbonate content of 95 per cent or above, which can be used in the production of soda ash and in applications relating to FGD . When sold for its chemical properties, high purity limestone is known as chemical stone .
HMT	The hypothetical monopolist test. This test is satisfied if a monopoly supplier of the products or services in question would find it profitable to increase prices.
IFRS	International Financial Reporting Standards.
JV	Joint venture.
Kt	Kilotonne or 1,000 tonnes. See also Mt .
Lafarge	Prior to the formation of Lafarge Tarmac on 7 January 2013, Lafarge comprised both Lafarge Aggregates Limited and Lafarge Cement UK Limited. Lafarge Aggregates Limited conducted all of Lafarge's UK operations in aggregates, asphalt, RMX , road contracting services and waste disposal, while Lafarge Cement UK Limited produced and supplied cement in the UK. Lafarge Group , its ultimate parent company, contributed Lafarge's businesses to the Lafarge Tarmac JV , which was formed on 7 January 2013.

Lafarge Group	Lafarge SA. Headquartered in Paris and listed on the Paris Stock Exchange, Lafarge SA is the ultimate parent company of Lafarge .
Lafarge Tarmac	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 .
Landbank	In relation to the planning regime for aggregates , 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.
Leiths	Leiths (Scotland) Ltd and its subsidiaries, Joss (Aberdeen) Ltd, Howie Minerals Ltd, and Alexander Ross and Sons Ltd.
Lime	Lime is made by heating limestone (calcium carbonate) in a kiln at about 1,000°C to produce quicklime (calcium oxide—also known as burnt lime)—driving off carbon dioxide in the process. Lime is generally used for construction and materials (iron and steel manufacture, component of mortars , soil stabilization, aerated concrete blocks, and plaster), as well as for agricultural lime (adjusting pH of soil), food and drink, and water treatment.
Limestone	A sedimentary rock composed largely of the minerals calcite and aragonite, which are different crystal forms of calcium carbonate (CaCO ₃). Limestone is not itself a cementitious material , but it is used: <ul style="list-style-type: none"> (a) in the production of the cement clinker itself; (b) as a minor additional constituent in the production of all cement grades, when clinker is ground to produce cement; and (c) as a cement extender in the production of CEM II limestone cement.
LMPA	Local Minerals Planning Authority, the planning body of the relevant local authority in GB that takes decisions to grant planning permission for the extraction of minerals including aggregates in its area.
Local Plan	A document published by the LMPA that contains its policy on minerals development for its local area. The Local Plan is known as the Local Minerals Plan in England, and the Local Development Plan in Wales and Scotland.
Majors	The five largest heavy building materials producers in GB . Prior to 7 January 2013, these were (in alphabetic order): Aggregate Industries, Cemex, Hanson, Lafarge and Tarmac . After 7 January 2013, these were (in alphabetic order) Aggregate Industries, Cemex, Hanson, HCM and Lafarge Tarmac . All of the Majors , with the exception of Aggregate Industries , have production facilities to produce cement in GB .
Marshalls	Marshalls plc.

MASS	The Managed Aggregates Supply System sets out the over-arching framework within which the planning regime for aggregates in each of England and Wales operates. The principles of the MASS are incorporated into the national planning policies for England and Wales.
MDF	Mineral Development Framework, an LMPA's core strategy and policy on minerals development (and waste disposal) for its local area. It forms the local policy framework upon which decisions on individual planning applications are made. Also known as the Minerals and Waste Development Framework, the MDF was required under the Planning and Compulsory Purchase Act 2004.
MEA	Modern equivalent asset. The MEA value is the cost of replacing an old asset with a new one with the same service capability allowing for any differences both in the quality of output and in operating costs.
Medium-tier independents	An operator which met one of our minimum annual production criteria of: (a) 1 Mt for aggregates ; or (b) 100,000m ³ 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.
MI	Mittal Investments Sarl.
Minimix	RMX delivery vehicles with a smaller capacity than normal RMX trucks (usually 4m ³ rather than 6m ³ or 8m ³).
Mortar	A mixture of cement , fine aggregate and water used for joining structural blocks and brickwork, and for plastering.
Mothballing	The process of deciding to cease production at a site, whilst retaining the site and maintaining it in reasonable working order with reasonable accessibility, such that it could become operational in a relatively short period of time.
MPA	The Mineral Products Association, a trade association for the UK aggregates , asphalt , cement , concrete , lime , mortar and silica sand industries. Its membership covers 100 per cent of cement production in GB , and for the UK, 90 per cent of aggregates production and 95 per cent of asphalt and RMX production.
MQP	Midland Quarry Products Limited, Tarmac's 50:50 JV with Hanson which is involved in quarrying, dry stone processing, production of asphalt , and the supply of rail ballast . In April 2013, Hanson completed the purchase of Tarmac's 50 per cent share and became sole owner.
Mt	Megatonne or 1 million tonnes. See also kt .
Nameplate capacity	The design capacity of a cement plant based on assumptions about inputs and efficiency. In practice, actual capacity may be lower than nameplate capacity.

National Contracting	Tarmac's road surfacing (also known as asphalt surfacing), maintenance and associated services contracting division.
NER	New Entrants Reserve, part of the ETS . Under ETS Phase III, 5 per cent of all free carbon allowances are set aside in the NER for new installations, including capacity extensions to existing plants.
Net revenues	Net revenues equal gross revenues less distribution costs.
NPPF	The National Planning Policy Framework, published on 27 March 2012, which sets out the national planning framework for England.
OFT	Office of Fair Trading.
PCA	Price-concentration analysis.
Pellite	A cementitious granulate material comprising a mix of small granules, half-inch stones and clusters made in a pelletizer by water-cooling BFS . Pellite can be used, once it has been ground, in the production of blended cements and as a partial cement replacement in the manufacture of concrete products.
Pelletizer	Equipment to water-cool BFS to produce pellite .
Permitted reserves	Reserves of aggregates in relation to which planning permission for extraction exists.
PFA	Pulverized fly/fuel ash , a by-product of pulverized fuel (typically coal) fired power stations and a pozzolanic material . See also CEM I, CEM II, CEM III, CEM IV, CEM V .
Pozzolana	A pozzolanic material of volcanic origin (pumice or volcanic ash), predominantly composed of fine volcanic glass.
Pozzolanic material	A material capable of reactions to form solid crystalline structures (as for a cementitious material) but only in the presence of an alkaline environment.
Precast concrete	A construction product 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.
Premier Cement	Premier Cement Limited.
Primary aggregates	Aggregates quarried from the land or dredged from the sea (the latter are also known as marine aggregates).
PSV	Polished stone value, an attribute of aggregates . The higher the PSV of a particular aggregate, the greater the skid resistance of the asphalt produced using that aggregate .
Rail ballast	A specific type of crushed rock aggregate used as a bedding material underneath railway tracks. These are igneous rocks that are resistant to pressure and breakage.

Rebate	A price reduction applied retrospectively and not affecting the invoice price.
Recycled aggregates	Aggregates derived from recycled sources such as demolition sites and construction waste.
Relevant GB operations	A relevant operating entity representing at least one of the following production and/or sale activities in GB : aggregates , cement or RMX .
RMX	Ready-mix concrete, a building material consisting of a mix of aggregates , cement and water supplied in a ready-mixed form that can be poured and that sets in situ.
ROCE	Return on capital employed. A firm's ROCE represents the return to equity and debt investors on their total capital invested in that firm. ROCE is usually calculated by dividing operating profit by the capital invested or employed, or by dividing earnings before interest and tax by shareholders' funds and long-term debt.
Secondary aggregates	Aggregates produced as the by-products of other industrial or mineral activities.
Semi-wet	Cement manufacturing processes in which water is either added to the kiln feed material or removed by filter pressing. See also dry process and wet process .
Sherburn	Sherburn Minerals Ltd.
Site	A relevant operating entity which is either a centre of production, or a centre for storage, distribution and administrative functions.
Site fixed costs	Fixed costs directly incurred at a site level.
Soda ash	Sodium carbonate, a vital ingredient in the manufacture of glass and many household cleaning products. High purity limestone is required for the production of soda ash.
Southern Cement	Southern Cement Limited.
Tarmac	The UK construction materials operations of Anglo American . Anglo American contributed Tarmac to the Lafarge Tarmac JV , which was formed on 7 January 2013. See also TBP .
Tata Steel	Tata Steel UK Limited.
TBP	Tarmac Building Products Limited, which is ultimately owned by Anglo American . Anglo American did not contribute TBP into the Lafarge Tarmac JV . TBP is active in the production of heavy building materials such as mortar , concrete blocks, bagged aggregates , binding products, sports surfaces and foundry sands.
TFEU	Treaty on the Functioning of the European Union, a treaty which sets out some of the fundamental rules governing the EU .

Thomas Armstrong	Thomas Armstrong (Holdings) Limited.
Titan	Titan Cement UK Limited.
Titan Cement Group	Titan Cement Company SA, the ultimate parent company of Titan .
TOH	Theory of harm.
Value in use	The discounted present value of the cash flows expected from continuing use and ultimate sale of an asset by the present owner.
Value to the business	The loss an entity would suffer if it were deprived of an asset. Also referred to as deprival value or value to the owner.
VAP	Value added product. Whilst this term can also be used in relation to cement , aggregates and asphalt , in this report it is primarily used to refer to innovative RMX products, requiring the use of 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 .
Volumetric truck	A vehicle which carries aggregates , cement and water in separate compartments to be mixed into concrete at the customer's site.
Wet process	A cement manufacturing process in which the feed material for the kiln is made by wet grinding and the resulting slurry is fed directly into the kiln. See also dry process and semi-wet/semi-dry process .