

Terms of reference and conduct of the inquiry

Terms of reference

1. On 3 April 2013, the OFT sent the following reference to the CC:
 1. In exercise of its duty under section 22(1) of the Enterprise Act ('the Act') to make a reference to the Competition Commission ('the CC') in relation to a completed merger, the Office of Fair Trading, ('the OFT') believes that it is or may be the case that:
 - (a) a relevant merger situation has been created in that:
 - i. enterprises carried on by or under the control of Imerys Minerals Limited and/or Imerys SA have ceased to be distinct from enterprises carried on by or under the control of Goonvean Limited; and
 - ii. as a result, the condition specified in section 23(3) of the Act will prevail, or will prevail to a greater extent, with respect to the supply of kaolin in the UK; and
 - (b) the creation of that situation has resulted or may be expected to result in a substantial lessening of competition within any market or markets in the UK for goods or services, including the supply of kaolin in the UK.
 2. Therefore, in exercise of its duty under section 22(1) of the Act, the OFT hereby refers to the CC, for investigation and report within a period ending on 17 September 2013, on the following questions in accordance with section 35(1) of the Act:
 - (a) whether a relevant merger situation has been created; and
 - (b) if so, whether the creation of that situation has resulted or may be expected to result in a substantial lessening of competition within any market or markets in the UK for goods and services.

(signed) ALI NIKPAY
Office of Fair Trading
3 April 2013

Conduct of the inquiry

2. On 3 April 2013, we posted on our website an invitation to express views about the merger.
3. On 2 May, we published an [administrative timetable](#) for our inquiry.
4. We asked a number of relevant parties to comment and complete a questionnaire on the merger. We gathered oral evidence through hearings with selected third parties. [Summaries of these hearings](#) are on our website.
5. All members of the Inquiry Group, accompanied by staff, visited the parties' kaolin mining sites in Cornwall on 1 May 2013.

6. On 15 May 2013, we published an [issues statement](#) on our website. We received no responses to the issues statement from third parties.
7. We received a joint written submission from Imerys and Goonvean and published a [non-confidential version](#) on our website on 12 June 2013. We also held hearings with the main parties on 18 June 2013 in separate sessions.
8. During the course of our inquiry, we sent Imerys and Goonvean working papers for comment and considered a number of submissions from them and other parties.
9. A summary of the provisional findings, notice of possible remedies and a supplementary issues statement were published on the [CC website](#) on 24 July 2013. We held response hearings with several third parties and the main parties during August 2013. We also published [responses to our provisional findings and Notice of possible remedies](#) on our website.
10. In the provisional findings published on 24 July 2013, the Group provisionally concluded that the merger had resulted, or might be expected to result, in an SLC in the market for the supply of kaolin for tableware and performance-mineral applications in the UK. In light of the responses to these provisional findings, and having reassessed all the evidence before it, the Group revised its original provisional finding on the tableware applications market. On 9 September 2013, the Group further consulted with tableware customers on its revised provisional conclusion that the merger would not result in an SLC in this market and invited comments. We received no substantive responses.
11. On 9 September 2013, we published on our website a [notice of extension](#) to the inquiry period.
12. We wrote to a number of third parties inviting views on the main parties' remedies proposals. On 19 September 2013, we sent a remedies working paper to the main parties for comment.
13. On 10 October 2013, we published a non-confidential version of our [final report](#) on our website.
14. We would like to thank all those who assisted with our inquiry.

Interim measures

15. On 8 April 2013, we adopted the [initial undertakings](#) given to the OFT by Imerys and published these on our website.
16. On 29 April 2013, we directed Imerys to appoint a [Monitoring Trustee](#). On 29 May 2013, we issued directions in relation to [confidentiality agreements and communications](#) between the main parties.
17. Throughout the inquiry, we considered a number of derogation requests and published on our website any [consents](#) granted.

The parties and the transaction

Introduction

1. This appendix provides background information on Imerys and Goonvean (the parties) and the transaction. It contains three main sections:
 - (a) Imerys: this section provides detail on the activities, financial performance and reserves of the Imerys UK kaolin business.
 - (b) Goonvean: this section provides detail on the activities, financial performance and reserves of Goonvean (a subsidiary of Goonvean Holdings) which operates the UK kaolin mining business.
 - (c) The transaction: this section outlines the transaction and focuses on the parties' rationale for the transaction, the post-acquisition operational structure and anticipated synergies.

Imerys

Overview

2. Imerys manages the UK kaolin activities of the Imerys SA group. It operates six quarries around St Austell in Cornwall. It controls these through a mix of freehold and long leasehold interests. A total of six pits are mined within these quarries employing in the region of 750 people.
3. Imerys told us that it had extensive processing facilities and had historically invested significantly in its infrastructure to ensure that its operations were as efficient as possible. The Imerys business model relied on producing a wide range of high-quality products as efficiently as possible whilst adopting extensive processing techniques.
4. Imerys produced around [X] tonnes of kaolin in 2012, of which roughly 89 per cent was exported. The size of the Imerys business has declined notably since 1990 when around [X] tonnes of kaolin were produced. This downward trend has continued albeit at a slower rate in more recent years, as shown in Figure 1.

FIGURE 1

Imerys UK kaolin production, exports and imports

[X]

Source: Imerys.

Note: Imports refer to imported kaolin 'feeds' for production purchased from other kaolin producers (not located abroad).

Financial information

Sales

5. Imerys told us that total kaolin sales (including exports and calcined/refractory kaolins) from its UK facilities decreased between 2004 and 2009 by £[redacted] million ([redacted] per cent) from £[redacted] million to £[redacted] million. Since 2009, sales have [redacted] in 2012.
6. [redacted]¹ This is illustrated in Figure 2(a) below.
7. Sales in value terms have decreased by £[redacted] million ([redacted] per cent) from £[redacted] million in 2008 to £[redacted] million in 2012. Imerys said that this was largely due to increased variable costs and hence prices, as illustrated in Figure 2(b) below.

FIGURE 2(a)

Kaolin sales by application by volume (2008 and 2012 budget)

[redacted]

Source: Imerys.

Note: The table above does not highlight 'Refractories' separately. These have been included within Premium.

FIGURE 2(b)

Kaolin prices by application (2008 and 2012)

[redacted]

Source: Imerys.

UK sales

8. Sales to Imerys's UK customers (excluding calcined and refractory kaolin) accounted for around [redacted] tonnes ([redacted] per cent) but contributed slightly more in value terms ([redacted] per cent or £[redacted] million).
9. Over the period from 2008 to 2012 Imerys's domestic kaolin sales have increased substantially from £[redacted] million to £[redacted] million (a £[redacted] million or [redacted] per cent [redacted]). [redacted] This is illustrated in Figure 3(a) and (b) below.

FIGURE 3(a)

UK domestic sales by value by application (excluding freight)

[redacted]

Source: Imerys.

¹ CAGR – Compound Annual Growth Rate (CAGR) provides a constant rate of return over the time period and dampens the effect of volatility of periodic returns that can render arithmetic means irrelevant.

FIGURE 3(b)

UK domestic sales by volume by application (excluding imports)

[REDACTED]

Source: Imerys.

Profitability

10. Imerys's kaolin business is profitable at the EBITDA (earnings before interest tax depreciation and amortization) level, as illustrated in Table 1.

TABLE 1 Imerys EBITDA, 2009 to 2012

	<i>£ million</i>			
	<i>FY 2009</i>	<i>FY 2010</i>	<i>FY 2011</i>	<i>FY 2012</i>
Sales	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
EBITDA	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
EBITDA margin (%)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Imerys.

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11. Profits cannot accurately be attributed to specific customer sales or sales by application. Profitability by product is not easily measured because the variable costs associated with operating the fixed asset base (hydrocyclones, water monitors, centrifuges etc) cannot be attributed to specific batches of kaolin due to the way the kaolin is extracted. Consequently it is also not possible to determine the relative profitability of UK sales versus exports.
12. A large amount of the fixed asset base is operated on long cycles and as such profitability is increased by trying to ensure that kaolin is flowing through the production chain continuously. In this way, energy is not being wasted whilst machines are running but not producing/processing.
13. Imerys said that its refineries were operating significantly below capacity and were thus not at optimum profitability. The budgeted utilization rates for 2013 give an indication of the level of spare capacity within the business and can be found in [Annex 1](#).
14. Although some processing equipment at some refineries is used more than others, there is spare capacity across them all with utilization ranging from [REDACTED] per cent on the pebble mill at the Goverseth refinery to [REDACTED] per cent on the magnet at the Goverseth refinery.
15. Overall each refinery is operating at similar utilization levels ([REDACTED] per cent at the Melbur refinery, [REDACTED] per cent at the Trebal refinery and [REDACTED] per cent at the Goverseth refinery).
16. Profitability is heavily affected by the method used to mine the kaolin. This is clearly evident when comparing the cost per tonne of dry-mined kaolin (£[REDACTED]) with that of traditional wet mining (£[REDACTED]). Profitability is also heavily affected by the processing adopted. For example, tube pressed dewatered kaolin costs £[REDACTED] per tonne but thermally dried kaolin costs £[REDACTED] per tonne.

17. The fixed cost base of the business is significant, for example in 2012 fixed costs totalled £[x] million ([x] per cent of sales). The bulk of the fixed cost base relates to labour costs and machine maintenance. It should be noted that these only relate to the fixed costs for primary production and do not include the fixed costs of secondary processing. The total fixed costs including secondary processing for 2012 totalled £[x] million.

Cash flow

18. Imerys is cash generative (with cash flow of between £[x] million and £[x] million in the last four years). Cash flow has historically been affected significantly by pension contribution requirements, capital expenditure levels and other non-operating items.
19. A summary of the Imerys cash flow for its kaolin business can be found in Table 2.

TABLE 2 Cash flow statement (summary), 2009 to 2012

	£ million			
	2009	2010	2011	2012
EBITDA	[x]	[x]	[x]	[x]
Change in working capital	[x]	[x]	[x]	[x]
Capital expenditure	[x]	[x]	[x]	[x]
Pension contributions	[x]	[x]	[x]	[x]
Land restoration	[x]	[x]	[x]	[x]
Operating cash flow	[x]	[x]	[x]	[x]
Non-operating items	[x]	[x]	[x]	[x]
Cash flow	[x]	[x]	[x]	[x]

Source: Imerys.

Balance sheet

20. The Imerys balance sheet presented in the draft statutory accounts shows a net asset position in 2012 of around £100 million (2011 around £124 million). There is no external debt (financing liabilities) owed to third parties.
21. The principal balance sheet items are fixed assets, working capital, pension liabilities and provisions for environmental compliance:
- Fixed assets mainly comprise freehold and leasehold land and buildings and mineral rights (2012: £108 million, 2011: £107 million).
 - Working capital mainly comprises trade debtors (2012: £24 million, 2011: £23 million), stock (2012: £16 million, 2011: £17 million), trade creditors (2012: –£14 million, 2011: –£16 million) and accruals (2012: –£16 million, 2011: –£12 million).
 - Pension liabilities totalled –£48 million in 2012 (2011: –£18 million).
 - Environmental compliance provisions build up throughout the life of a mine to cover restoration works, demolition and decontamination costs required to close a mine in line with environmental and regulatory requirements (2012: –£29 million, 2011: –£31 million).

Goonvean

Overview

22. Prior to the transaction with Imerys, Goonvean was a subsidiary of Goonvean Holdings. Goonvean considered that a key part of its marketing strategy was the perception of the business as an independent, family-run business that provided a personal service.
23. Goonvean had a turnover of £21.2 million in the financial year to 30 September 2011. £[✂] million of this is attributed to the sale of kaolin, with the remainder earned through sales of secondary aggregates (a part of the business not acquired by Imerys).
24. The statutory accounts of Goonvean state that 76 per cent of sales related to exports (71 per cent in 2010). Excluding domestic sales of secondary aggregates, Goonvean estimated that around 90 per cent of turnover related to exports.
25. Goonvean does not have significant processing facilities. It operates five open-pit mines and two refining/drying plants in the area surrounding St Austell, employing in the region of 135 people. Many of Goonvean's sites are located adjacent to those of Imerys.
26. Goonvean is the only European producer of kaolin that meets the standards and technical requirements of the British, European and US pharmacopoeia.
27. The production and export levels of Goonvean between 2008 and 2012 are presented in Figure 4. Between 2008 and 2012, exports accounted for between 83 and 91 per cent of production.

FIGURE 4

Goonvean production and exports by volume, 2008 to 2012



Source: Goonvean.

Financial information

Sales

28. Figure 5 below presents Goonvean sales by value and by volume from 2008 to 2012. Goonvean has in the region of 200 customers and exports to approximately 50 different countries.

FIGURE 5

Goonvean sales by value and by volume, 2008 to 2012



Source: The parties.

UK sales

29. UK domestic sales made by Goonvean in 2012 totalled £2.3 million (excluding freight). This accounts for around 14 per cent of total sales.
30. Life sciences and specialty applications have both shown growth between 2008 and 2012. This is particularly true of specialty applications, the sales of which have increased by £[redacted] million ([redacted] per cent) from £[redacted] million to £[redacted] million. This increase has been driven by increases in volume sold. In contrast, there have been declining sales in the tableware, sanitaryware and paper-filler applications (with the exception of 2010 when [redacted] million tonnes were ordered by [redacted] for exporting to non-UK customers).

FIGURE 6(a)

UK domestic sales by value by application (excluding freight)

[redacted]

Source: The parties.

FIGURE 6(b)

UK domestic sales by volume by application

[redacted]

Source: The parties.

Profitability

31. Goonvean told us that its kaolin business had experienced tough trading conditions in recent years and as a consequence had made an operating loss of around £4.25 million since 2009. However, the combined kaolin and secondary aggregates business had made an operating profit in 2010 and 2011. 2012 profitability is impacted by transaction-related expenses and as such, profitability is reduced in this period.

TABLE 3(a) Kaolin division operating profit, 2009 to 2012

	£ million			
	FY09	FY10	FY11	FY12
Sales	[redacted]	[redacted]	[redacted]	[redacted]
Operating loss	[redacted]	[redacted]	[redacted]	[redacted]

Source: The parties.

TABLE 3(b) Goonvean operating profit (aggregate and kaolin divisions), 2009 to 2012

	£ million			
	FY09	FY10	FY11	FY12
Kaolin division	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Aggregate division	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Goonvean	-1.2	0.3	0.8	0

Source: The parties.

32. As with Imerys, profits cannot accurately be attributed to specific customer sales or sales by application. Goonvean estimated that only [REDACTED] per cent of sales made a positive margin and that in many instances sales were made with a view to generating a contribution to fixed costs.

The transaction

History

33. In [REDACTED], informal discussions were held between Goonvean and Imerys with a view to establishing some form of mutual cooperation in the mining operations of the two businesses. The aim was to work together to maximize the throughput of product through the fixed asset base and thus increase efficiency and consequently profitability. These discussions, however, collapsed as no mutually acceptable agreement could be found.
34. Goonvean said that it was only ever willing to discuss the sale of the business should a worthy offer be made. When Imerys made its offer, the Goonvean board voted 4:1 in favour of reviewing the sale of the business.
35. Goonvean said that it did not market the business for reasons of confidentiality as it valued its reputation as an 'independent family business that provided products tailored to customers own needs'. Additionally, in the view of the board Imerys was the only party that could extract the synergies required to justify the price the Goonvean board required to approve the sale.
36. An offer for Goonvean was initially made by Imerys in [REDACTED] (£[REDACTED] million) but this was withdrawn due to [REDACTED] as a result of the global financial crisis.
37. In 2010, Imerys initiated takeover discussions again. In 2011, an offer was made for Goonvean by Imerys which valued Goonvean (excluding the aggregates business) at £[REDACTED] million. This offer of £[REDACTED] million was said by Goonvean to be [REDACTED].

Overview

38. Imerys acquired 100 per cent of Goonvean from Goonvean Holdings. The secondary aggregates division, which had been part of Goonvean, was carved out pre-acquisition and not included in the sale.
39. The transaction was completed on a debt-free, cash-free basis. The purchase price agreed was £[REDACTED] million. After net debt (£[REDACTED]), working capital and pension asset value adjustments, the consideration paid was £[REDACTED] million. The acquisition was funded through Imerys's cash reserves.

40. Imerys and Goonvean, together the supplier, entered into a long-term supply agreement with St Stephen Limited, now Goonvean Aggregates Limited (GAL), on the same date as the share purchase agreement, that being 31 October 2012. As per the terms of this agreement, Imerys shall supply GAL with kaolin waste material for use in GAL's secondary aggregates business. The key terms of this agreement are highlighted below:
- (a) Imerys shall supply and deliver to GAL such volume of kaolin waste material [X] to enable GAL to produce [X] of finished processed aggregate product for sale to third parties. [X]
 - (b) GAL will pay Imerys a fee of £[X] for each tonne of finished processed aggregate product it produces for sale per year [X].
 - (c) The contract is for a period of [X] years from 31 October 2012 [X]. The parties will prepare and agree on a [X] plan, to be reviewed and revised as necessary over the period of the agreement, which shall identify, among other things, the sites to be occupied, the provision of utility service infrastructure, practical and logistics and the source of the waste material. The agreement also specifies that kaolin waste material [X].
 - (d) The agreement does not preclude Imerys from providing kaolin waste material to aggregate manufacturers under its current arrangements with Aggregate Industries Limited and Brookland Sand & Aggregate Limited and the replacements or renewals of the same, or to alternative third party aggregate producers.

Transaction rationale—Imerys

41. The Imerys UK kaolin platform strategic review in May 2012 highlighted three key challenges that the business faced and also identified three possible future strategies it could adopt in response to these.
42. The three key challenges facing the Imerys business were identified as:
- (a) [X]
 - (b) [X]
 - (c) *Increased production costs.* The UK business experienced increased costs as a result of a range of external, non-controllable factors, for example energy price increases, the climate change levy, inflation, and the relative strength of sterling versus the euro. [X]
43. The three strategies identified to address the above challenges are outlined below:
- (a) *Strategy A.* [X]
 - (b) *Strategy B.* [X]
 - (c) *Strategy C.* Acquire Goonvean [X]
44. The three strategic options noted above were modelled by Imerys. The key performance indicators (KPIs) resulting from this exercise are presented in Table 4. Strategy C was seen as the best strategic option by Imerys's management.

TABLE 4 A review of the strategic scenarios identified

	Strategy A	Strategy B	Strategy C
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Sales per year (by volume)	[REDACTED]	[REDACTED]	[REDACTED]
<i>Key financials</i>			
[REDACTED]			
Sales per year (by value)	[REDACTED]	[REDACTED]	[REDACTED]
Gross margin	[REDACTED]	[REDACTED]	[REDACTED]
EBITDA	[REDACTED]	[REDACTED]	[REDACTED]
EBIT	[REDACTED]	[REDACTED]	[REDACTED]
ROCE	[REDACTED]	[REDACTED]	[REDACTED]
Cumulative operational EBIT (2017–2021)	[REDACTED]	[REDACTED]	[REDACTED]
Cumulative operational EBIT margin average (2017–2021)	[REDACTED]	[REDACTED]	[REDACTED]
DFCF	[REDACTED]	[REDACTED]	[REDACTED]
Operating cash flow	[REDACTED]	[REDACTED]	[REDACTED]
Non-operating cash flow	[REDACTED]	[REDACTED]	[REDACTED]

Source: Imerys.

Synergies

45. Imerys identified synergies that would be available should Imerys and Goonvean fall under common ownership. Many of these synergies were considered to be unique to Imerys given the proximity of its operations to those of Goonvean. Details on the efficiencies that the parties have identified are highlighted in Appendix L.

Transaction rationale—Goonvean

46. Although there were no internal board papers on the decision to sell the business, the parties told us that the following strategic issues were relevant:
- (a) *Reducing profitability.* Goonvean had been unable to increase its prices in line with cost increases associated with increased energy prices, the climate change levy and increased extraction costs as mining took place at greater depths. It was also felt that this trend would continue in future.
 - (b) *Size.* Goonvean was not large enough to negotiate effectively with customers and its competitors were larger, more powerful and better placed to take market share. Goonvean is also a 'one-mineral' company in that it only produces kaolin. Goonvean found that negotiations were increasingly being conducted by its competitors on a multi-product-offering basis. It could not compete on this level.
 - (c) *Dwindling reserves.* The G1 reserves were fast being exhausted by low-value tableware sales. These reserves were seen as imperative as they were required for the high-margin life-science applications. Downsizing the business to preserve these reserves was not considered a viable option as scale was required to cover fixed costs.
 - (d) *UK only.* Goonvean did not have reserves outside the UK so was affected by the cost of freight which its competitors could avoid with reserves in several regions worldwide. Increasing foreign sales was also becoming problematic as competitors established foreign sales offices which Goonvean could not rival.

- (e) *Technology limitations.* Goonvean did not have the extensive processing/refining infrastructure (and could not afford to install it) to compete in all areas of the market in which its competitors could. It also faced significant future capital expenditure requirements which the board believed it would struggle to meet. This was particularly true with regard to the higher-value sectors (premium range offerings).
- (f) *Pension deficit.* Goonvean had a significant pension deficit (£[~~3~~]) and a relatively aged workforce. This provided significant future risk.

2013 budgeted utilization rates by refining plant by processing activity

TABLE 1 The Trebal refining plant

	<i>Tonnes</i>	<i>Utilization %</i>
Grades	[X]	[X]
Centrifuging	[X]	[X]
Sand grinders	[X]	[X]
Dewatering	[X]	[X]
Screening	[X]	[X]
Magnet	[X]	[X]
Ozone	[X]	[X]
Bleaching	[X]	[X]
Total	[X]	[X]

Source: Imerys.

TABLE 2 The Goverseth refining plant

	<i>Tonnes</i>	<i>Utilization %</i>
Dorr Oliver	[X]	[X]
Blunger	[X]	[X]
Pebble mill	[X]	[X]
Centrifuge	[X]	[X]
Grinder	[X]	[X]
DOR Recovery circuit	[X]	[X]
Magnet	[X]	[X]
Alfa Laval	[X]	[X]
Bleach Track	[X]	[X]
Total	[X]	[X]

Source: Imerys.

TABLE 3 The Melbur refining plant

	<i>Tonnes</i>	<i>Utilization %</i>
Grades	[X]	[X]
Hydrocyclones	[X]	[X]
Centrifuging	[X]	[X]
DOR Recovery	[X]	[X]
Magnet	[X]	[X]
Blending	[X]	[X]
Total	[X]	[X]

Source: Imerys.

Industry background

Introduction

1. This appendix sets out background information on the UK kaolin industry, and is structured in two main parts:
 - (a) Kaolin overview: this section explains what kaolin is, the main uses of kaolin and how kaolin is produced/mined.
 - (b) UK kaolin production: this section provides an overview of the current and historic levels of kaolin production in the UK and highlights the location of kaolin deposits in the UK. It also provides background on kaolin producers in the UK.

Kaolin overview

2. Kaolin is a clay comprised principally of the hydrated aluminosilicate clay mineral kaolinite and is commonly referred to as china clay.
3. There are two types of kaolin deposit:
 - (a) Metamorphic (primary) deposits are formed over many millions of years through the hydrothermal decomposition of granite rock. The deposits found in the UK are metamorphic.
 - (b) Sedimentary (secondary) deposits are comprised of kaolin that has been formed elsewhere and transported and deposited by natural forces. Sedimentary deposits can be found in Brazil, for example.
4. The characteristics and exact chemical composition of kaolin varies between deposits (or indeed throughout the same deposit). As such, some kaolin deposits possess unique characteristics that make them suitable for specific uses. For example, kaolin used in particular life-science applications is required to be free of arsenic and dioxins. We were told that only one high-quality kaolin deposit in the UK meets these criteria (the Goonvean pit owned by Goonvean).

Kaolin production/mining

5. Kaolin is predominantly mined in open pits.
6. Kaolin has traditionally been extracted by blasting the rock face with strong water jets/monitors in a process known as hydraulic mining. More recently, 'dry mining' has been introduced whereby kaolinized rock is extracted by bulldozer trucks and is taken for screening and sorting (removing unsuitable, oversize material) before being made into a slurry (a solution with water) and processed. Dry mining allows for more selective extraction and increased yields but is not suitable for mining all deposits.
7. Once mined, kaolin requires processing before it can be used in a particular application. Processing can involve grinding, centrifuging, magnetic separation, drying/calcining and colour-beneficiating techniques. These techniques are costly and not all market participants have the ability to perform these processes extensively. For example, Imerys uses magnetic separation but Goonvean does not.

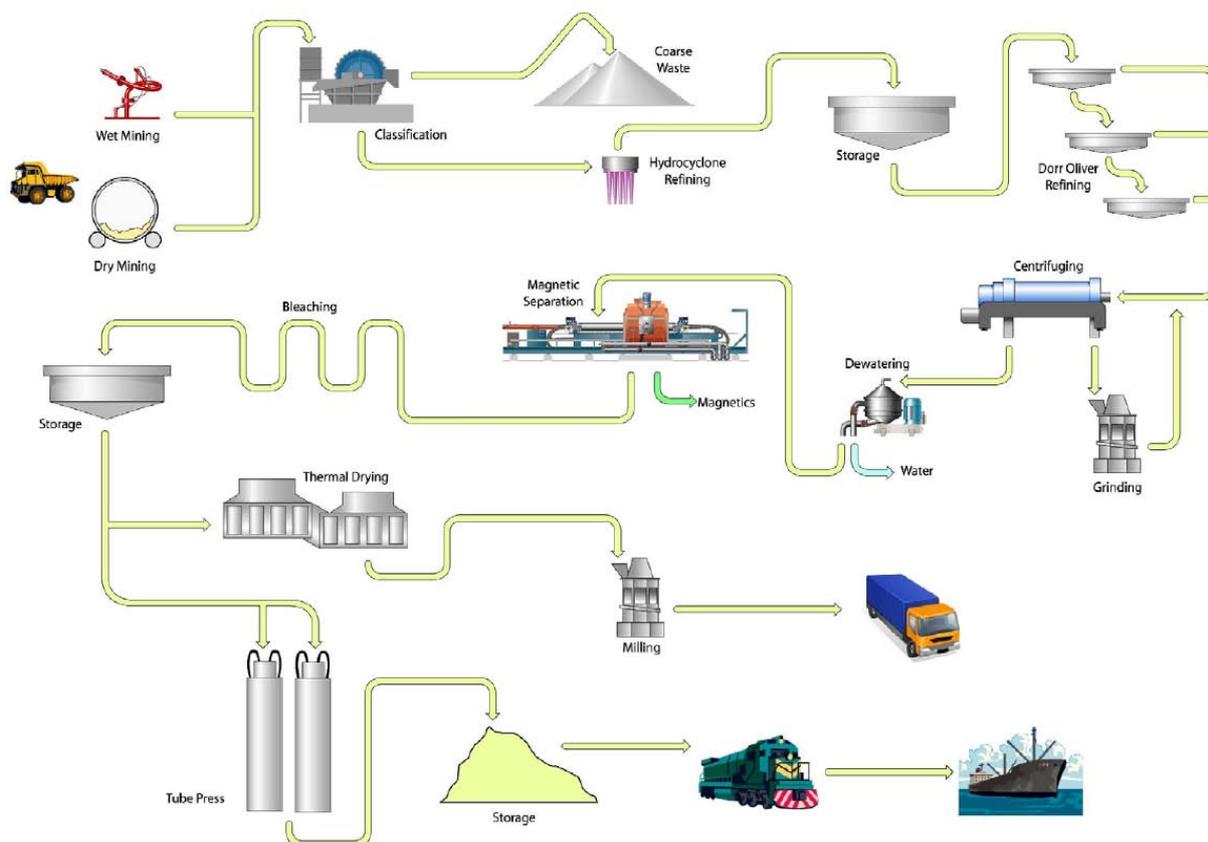
8. Processing is conducted with two broad objectives in mind:
 - (a) to remove impurities (such as quartz and feldspar) from the deposits; and
 - (b) to refine the kaolin thus increasing its qualitative characteristics.
9. Kaolin may be sold in solid form or as slurry, and can be dried into pellets or powder.
10. The extraction of kaolin also results in by-products of sand and stent (waste rock), some of which can be used as feedstock to produce secondary aggregates. These secondary aggregates are used mainly in making ready mix concrete and other concrete products, and in construction and road building as fills and sub-bases.
11. A large 'stockpile' of secondary aggregates has been built up in the UK (estimated at approximately 600 million tonnes).¹
12. It is estimated that, for every 1,000 tonnes of kaolin, 9,000 tonnes of waste is mined² (not all of which is suitable as secondary aggregates feedstock). If waste materials are not used in the production of secondary aggregates, they have to be disposed of in an above-surface tip or a sub-surface void (eg a disused quarry). Transport and disposal of waste into these tips incurs a cost.
13. There are many different processing methods that can be applied during the production process (see paragraphs 16 to 26). However, the nature of a particular kaolin product is also determined by the ratio that various different kaolins are blended at and the natural properties of the 'raw' kaolin extracted from the pit. Given this, it is possible to create different kaolin products/grades using the same 'raw' kaolin inputs and the same processing techniques/methods by varying the ratio in which the various blends are mixed.
14. Imerys has extensive processing facilities. In the region of [X] per cent of its UK output is produced using the modern 'dry mining' method and it has processing, storage and distribution infrastructure. Goonvean has less advanced processing facilities in comparison with Imerys.
15. It is noted that in some instances the input kaolin feed and processing methods do not change between products (between Imerys's [X] and [X] products, for example). More detail on this can be found in Appendix D, which includes details on supply-side substitutability.
16. Figure 1 contains a flow chart that shows processing stages. It should be noted that all processing methods require kaolin to be in a slurry form. We explain these processes in the remainder of this section.

¹ British Geological Survey, Natural Environment Research Council, Mineral Planning Factsheet. www.bgs.ac.uk/mineralsuk/planning/mineralPlanningFactsheets.html.

² British Geological Survey, Natural Environment Research Council, Mineral Planning Factsheet. www.bgs.ac.uk/mineralsuk/planning/mineralPlanningFactsheets.html.

FIGURE 1

Kaolin processing stages



Source: Imerys.

Classification

17. This is the first stage of kaolin processing and is designed to remove all material coarser than 250 microns (mainly quartz and feldspar).
18. 'Bucket wheel' classifiers are located onsite at the kaolin pits. This simple classification technique relies on gravity to separate coarse/less coarse particles.

Hydrocyclone refining

19. Slurry is fed into the hydrocyclones which are conical in shape. Centrifugal force is relied upon to separate the fine kaolin deposits from the less fine waste materials. Fine kaolin particles do not fall to the bottom of the conical hydrocyclone and instead remain close to the surface. Coarse material sinks to the bottom and is removed.
20. Hydrocyclones separate kaolin particles which are less than roughly 53 microns.

Dorr Oliver refining

21. This is a hydro separation process. Slurry is left to settle and separate as the lighter particles are suspended above heavier larger ones.

Centrifuging and grinding

22. Centrifuge processing is similar to hydrocyclone processing but is performed in horizontal tubes as opposed to vertical conical tanks and is a more intense process.
23. Centrifuging is used to process the coarser material from the hydrocyclones in which kaolin can still be found (albeit in less abundance). Coarser material is first ground and is then reprocessed in the centrifuges to ensure that as much kaolin as possible is extracted.

Magnetic separation

24. Iron- and titanium-based minerals are separated using electromagnets.
25. Kaolin slurry is passed through a canister containing a fine steel wool. When magnetized the impurities are attracted to the wool and isolated. This technique is particularly effective at separating mica and tourmaline and works to increase significantly the fired brightness of kaolin-based clays and prevent blemishes which can be caused by these impurities.

Bleaching

26. This is a chemical bleaching process whereby a reducing agent (usually sodium dithionite) is added to induce a reaction which increases the brightness of the kaolin.

Tube press

27. The kaolin is pressed using hydraulic rams. This compacts the slurry and forces the kaolin to form a hard 'cake'.

Kaolin uses

28. Kaolin is used in a variety of products across a number of sectors but may be classified as having five broad applications: paper, sanitaryware, tableware, performance minerals and life sciences. Kaolin is also used in some other applications, such as fibreglass, refractories and boiler additives. Background on each of these is provided in this section.
29. UK consumption of kaolin is relatively small and along with UK production domestic sales have also declined significantly from 450,000 tonnes in 1990 to 167,000 tonnes in 2008.³ The parties estimated that UK sanitaryware sales had fallen by as much as 84 per cent since 2003/04, with paper filler sales down by 54 per cent, tableware down 45 per cent and specialty application sales down 35 per cent. This decline was largely attributed by the parties to the absence of UK paper producers and the rise of digital media, increased competition from manufacturers abroad and an increasing number of alternatives to kaolin being adopted.
30. The price of kaolin can vary significantly. High-quality kaolin fetches a significant premium with the highest-quality pharmaceutical-grade kaolin achieving prices in excess of £[redacted] per tonne. Paper filler is at the other end of the spectrum and sells at a price in the region of £[redacted] per tonne.

³ British Geological Survey, Natural Environment Research Council, Mineral Planning Factsheet. www.bgs.ac.uk/mineralsuk/planning/mineralPlanningFactsheets.html.

31. Figure 2 provides an indication of the prices achieved for different kaolin grades over recent years. It is clear from this that high-grade kaolin (such as premium performance-mineral grades) are sold at a premium if compared with low-grade kaolin (such as grades supplied to paper-filler applications).

FIGURE 2

Indicative application category prices for Imerys, 2004 to 2012



Source: Imerys.

Note: This chart has been extracted from an internal Imerys presentation and groups products according to Imerys's internal classifications.

Paper

32. Kaolin is used as paper filler to alter the properties of wood fibres, so as to add certain desirable characteristics such as increased opacity and brightness, enhanced gloss and reduced cost (kaolin is about three to four times cheaper than wood pulp or recycled pulp). This application does not generally require very high-quality kaolin. Kaolin is usually sold to the paper industry in slurry form.
33. Paper producers that adopt a pH neutral or alkaline-based manufacturing method can substitute kaolin for other substances such as ground calcium carbonate (GCC) or precipitated calcium carbonate (PCC). These substitutes are, however, not viable for manufacturers using acid-based manufacturing methods.
34. Kaolin is also used for paper-coating applications, where it enhances the surface properties of paper, providing opacity, gloss and printability. Kaolin used in paper-coating applications tends, following the further processing that is often required, to be of higher quality than kaolin used in paper-filler applications.

Sanitaryware

35. Kaolin is used in sanitaryware (ie toilets, washbasins, tiles etc) as it provides whiteness and contributes towards mullite skeleton formation during ceramic firing.
36. This application also does not generally require much high-quality kaolin but some is often used in conjunction with a mix of lower grades to create a 'recipe' that is fit for purpose.

Tableware

37. As with sanitaryware, kaolin is used in tableware (ie bodies of cups, saucers and plates) to add whiteness and contribute towards mullite skeleton formation during ceramic firing. Kaolin is also used in glazes and engobes for tableware and in ceramic applications.
38. Most of the tableware produced in the UK is high-end tableware. This requires a comparatively larger input of high-quality kaolin, compared with other applications such as sanitaryware, as brightness and quality of finish is more important in these finer tableware products.

Performance-mineral applications

39. Performance-mineral applications (for example, paints, rubbers, tape, plasterboard, glue, carpet backing products) use kaolin in relatively smaller proportions. The quality of kaolin required ranges from relatively low-quality grades that have undergone only basic processing (eg used in adhesives and rubber) to extensively processed, high-quality grades (eg used in gloss paints and coatings).
40. Some performance-mineral applications use calcined kaolin, which is produced by heating hydrous kaolin to very high temperatures in a kiln. The calcination process increases brightness of the kaolin by burning off organic matter, increases the strength of the kaolin, improves refractory properties, and alters the size and shape of the particles. We were told that Imerys was the only producer of calcined kaolin in the UK.

Life-science applications

41. Kaolin products are used in life-science applications such as pharmaceuticals, veterinary products and crop protection. Supply to some of these markets requires accreditation. For example, pharmaceutical-grade kaolin can only be supplied if it conforms to the British, European or US pharmacopoeia standards.⁴ Similarly, kaolin used in animal feeds has to be accredited by the Feed Materials Assurance Scheme (FEMAS). Kaolin supplied for these products might require a particular chemical make-up, such as an absence of arsenic and heavy metals. [X]

Other applications

Fibreglass

42. Kaolin is used in the production of fibreglass to ensure the finished fibreglass product's resistance to chemical and physical attacks. We understand that Imerys is the only UK producer supplying kaolin to reinforced fibreglass application. It produces suitable kaolin grades by [X].

Refractory applications

43. Kaolin is used in refractory applications, such as in insulation bricks and mortars used in metal melting and foundry industries. Here the ability of the product to retain its strength at high temperatures is important. Most kaolin supplied to these applications in the UK is calcined kaolin, although some hydrous kaolin is also supplied, where it can only be used in relatively low temperature refractory applications. Imerys is the only UK producer of calcined kaolin, and both Imerys and Goonvean supply small quantities of hydrous kaolin to refractory applications.

Boiler additives

44. Kaolin is also used in other miscellaneous applications. One such use in the UK is boiler additives, where a specialized kaolin product, produced in the UK by Imerys only, is used to aid biomass combustion.

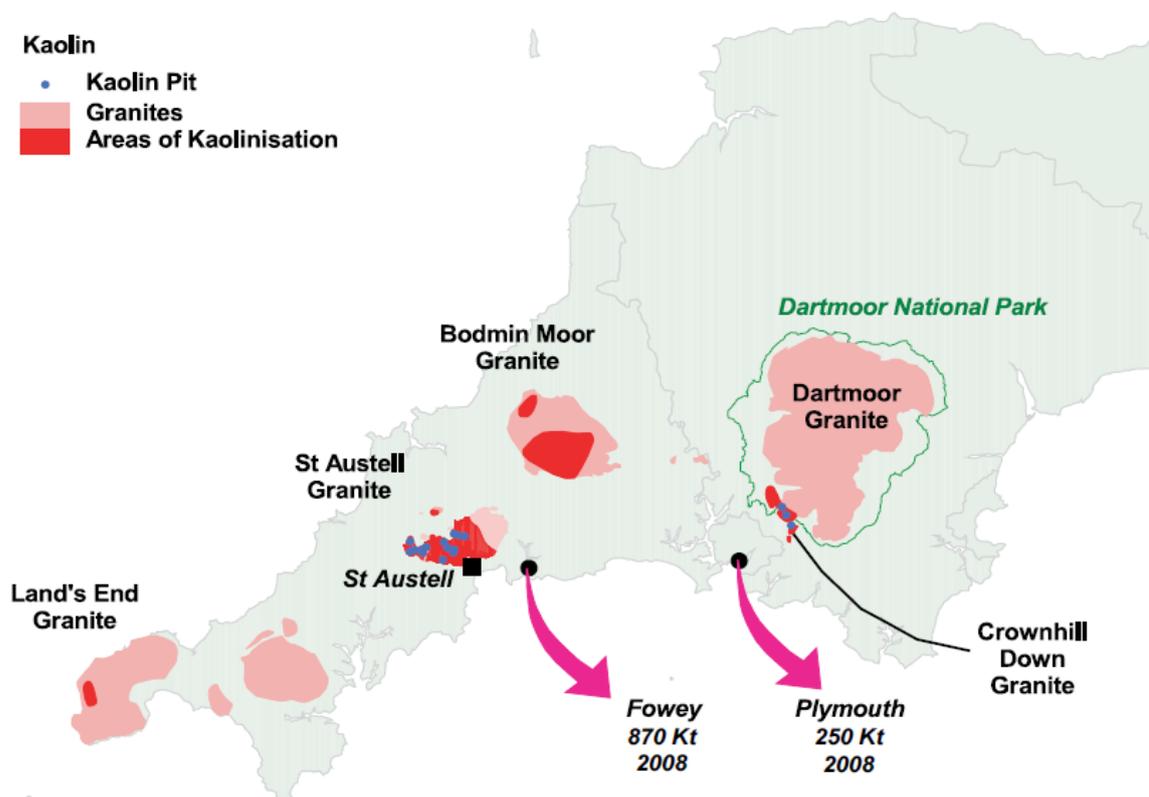
⁴ See, for example, www.pharmacopoeia.gov.uk/.

UK kaolin production

45. Kaolin resources in the UK are confined to the South-West of England. Kaolin may be found at depths of over 250 metres but 100 metres is more typical.
46. In the UK, kaolin production is principally confined to the area surrounding St Austell, which accounts for 88 per cent of total kaolin sales, the remainder coming from the south-west margin of Dartmoor in Devon. The British Geological Society states that the kaolin deposits surrounding St Austell are 'by far the most important source and have the capability (unique in the world) to produce a wide variety of high quality kaolin grades'.⁵
47. Figures 3 and 4 show the kaolin resources and pits in the UK.

FIGURE 3

Kaolin pit locations in Devon and Cornwall



Source: British Geological Society, Natural Environment Research Council, Mineral Planning factsheet.

⁵ British Geological Survey, Natural Environment Research Council, Mineral Planning Factsheet: www.bgs.ac.uk/mineralsuk/planning/mineralPlanningFactsheets.html.

48. The total permitted reserves of kaolin in the UK are not published for commercial reasons. It is, however, thought that sufficient kaolin reserves exist in and around the existing pits both in Cornwall and Devon to sustain current rates of production for at least 50 years⁶ (although the parties noted that it may become uneconomical to extract kaolin within 15 years).
49. Imerys operates six quarries around St Austell. It controls these mines through a mix of freehold and long leasehold interests. Until 2001, Imerys also operated a mine on Bodmin Moor, but this was closed as it was deemed too inefficient to operate and Imerys was seeking to reduce costs. Imerys owns kaolin pits on Dartmoor, but some of these are operated by Sibelco through various lease and operational contracts.
50. Goonvean operates five open-pit mines in the area surrounding St Austell. In some instances its sites are located adjacent to those of Imerys. It is estimated that Goonvean's reserves include approximately [X] tonnes of master grade kaolin.
51. Kaolin production is energy intensive and as such the introduction of the climate change levy significantly increased the cost of production in the UK (although a 70 per cent rebate was agreed with the UK Government).

UK kaolin producers

52. There are three main kaolin producers in the UK: Imerys, Goonvean and Sibelco. For details on Imerys and Goonvean, see Appendix B.

Sibelco

53. Sibelco has its kaolin operations solely in Devon, on the Lee Moor and Hemerden sites it leases from Imerys and its own Shaugh and Headon sites. Sibelco is owned by its Belgian parent company SCR Sibelco. SCR Sibelco is a large multinational operating 228 sites across 41 countries.
54. Table 1 shows Sibelco's UK production, sales and export volumes by application. [X]

TABLE 1 **Sibelco's sales of UK kaolin production, UK sales and exports by application, 2012**

Kaolin application	Sales of UK production		UK sales		Exports tonnes	Exports as a proportion of total UK production %
	tonnes	%	tonnes	%		
Sanitaryware	[X]	[X]	[X]	[X]	[X]	[X]
Paper filler	[X]	[X]	[X]	[X]	[X]	[X]
Performance minerals	[X]	[X]	[X]	[X]	[X]	[X]
Imerys	[X]	[X]	[X]	[X]	[X]	
Total	[X]		[X]		[X]	[X]

Source: CC analysis of Sibelco's data.

Note: [X]

⁶ British Geological Survey, Natural Environment Research Council, Mineral Planning Factsheet.

Kaolin grades and production

Introduction

1. This appendix sets out supporting evidence and analysis in relation to properties of kaolin grades and their production. We also present evidence on supply-side substitutability of the different kaolin grades.
2. This appendix is structured as follows:
 - (a) First, we review the main properties of kaolin which are important for different applications.
 - (b) Second, we analyse the main properties of Imerys and Goonvean kaolin grades.
 - (c) Third, we set out evidence on the extent to which kaolin customers can switch between various kaolin grades.
 - (d) Fourth, we explain the production process of kaolin.
 - (e) Fifth, we set out evidence on the extent to which production can be switched to produce different kaolin grades.
 - (f) Finally, we analyse evidence on the extent to which Imerys, Goonvean and Sibelco are able to produce different grades of kaolin.

Kaolin properties

An overview of the main properties of kaolin

3. Below we set out evidence on the most important properties of kaolin, and the properties which are important in different applications. The main parties and third parties told us that physical and chemical properties of kaolin are very important in customers' decisions to purchase a particular kaolin grade, as they influence the properties and the performance of the finished products that use kaolin as an input.
4. Imerys submitted to us an overview of the characteristics used in the specifications for kaolin grades. These are listed below:
 - (a) Brightness—the percentage of light reflected by a body compared with that reflected by a perfectly reflecting diffuser, measured at a nominal wavelength of 457 nm; this reflectance value is known as the ISO brightness or R457.
 - (b) Yellowness—similar to above, but measured at a nominal wavelength of 570 nm.
 - (c) Particle size—measured as the equivalent spherical (or Stokes) diameter, and expressed as a cumulative mass percentage finer than a specified Stokes diameter (eg per cent with diameter smaller than 2 µm).
 - (d) pH level.

- (e) Modulus of rupture—a material’s ability to resist deformation under load; this is relevant for ceramic applications. We understand modulus of rupture is often referred to as ‘plasticity’ or ‘strength’.
- (f) Viscosity concentration—a measure of the resistance of a liquid to flow, relevant for paper applications.
- (g) Casting concentration—similar to above, but used in relation to ceramic applications. We understand that casting concentration and viscosity concentration is what is often referred to as ‘rheological’ properties of kaolin.
- (h) Casting rate—the speed at which a slip casts in plaster moulds over a given time; this is relevant for ceramic applications.
- (i) Fired properties—percentage contraction, water absorption, and the fired brightness, relevant for ceramic applications. These are physical properties of kaolin monitored over the temperature range generally used to produce clay body ceramics (900°C to 1,250°C). Variation in firing behaviour mainly results from differences in chemistry and particle-size distribution. For example, kaolins with a fine particle size form low-porosity body at lower temperatures.
- (j) Chemical elements, such as iron contents; chemical analysis is undertaken by X-ray fluorescence, and detects nine major and minor chemical elements, such as iron oxide and potassium oxide.

Importance of kaolin properties by application

- 5. The main parties explained that the importance of kaolin properties varied by application. Customers selected between kaolin grades which displayed the characteristics they required based on an assessment of their needs and price. Below we set out evidence on the properties which are important for different customers.

Paper and performance-mineral applications

- 6. The main parties submitted that kaolin used in paper-filler applications provided cost savings and optical properties—it offered brightness and opacity. They told us that, except in relation to some rubber applications where kaolin added texture, its primary use in the performance-mineral applications was as a white pigment.
- 7. The main parties explained that, for paper-filler and performance-mineral applications, the chemical make-up of the kaolin used was not important, as no ‘firing’ took place, and it was the physical properties relating to brightness and particle size which were important. [REDACTED]
- 8. Third parties indicated that kaolin provided opacity in paper, hence kaolin brightness was important. Paper-filler customers [REDACTED] suggested that the particle size of kaolin was important:
 - (a) [REDACTED]
 - (b) James Cropper submitted that the key characteristic of the paper-filler grade Polwhite E was its particle size.
- 9. Customers of kaolin for performance-mineral applications [REDACTED] said that the particle size was important for these applications. [REDACTED] submitted that the particle size and

shape were the key characteristics of the grades Polwhite B and Polwhite E that it purchased.

Ceramic applications—sanitaryware and tableware

10. The main parties submitted that kaolin used in white tableware, sanitaryware and tiles provided whiteness and contributed to the mullite skeleton formation during ceramic firing.
11. Kaolin can represent a significant input into ceramic applications—typically in the region of 25 to 40 per cent in the final product. Sanitaryware and tableware customers told us that the most important characteristics of kaolin in ceramic applications were those that related to its casting and firing properties, such as casting rate, fired colour, plasticity (or strength) etc. Based on information from customers, we understand that both physical properties, for example particle size, and chemical composition, such as iron content, would influence these properties. In particular, customers noted that kaolin with lower iron content was suitable for higher-quality, whiter tableware. Tableware customers told us that, for them, the important characteristics of kaolin were its whiteness, plasticity, iron content, fired contraction and casting properties. Depending on the quality of their products, tableware customers used kaolin grades that had more or fewer of these properties. Better kaolin grades were usually the ones that gave a whiter colour, were low in iron content, provided good plasticity and had good fired contraction and casting properties.
 - (a) Furlong submitted that kaolin used in the manufacturing of its ceramic bodies was important for its fired colour whiteness, its plasticity, its slip-casting properties and its good performance in pressure-cast processing. For higher-quality tableware, Furlong used kaolin grades that gave a very white fired colour, that had good plastic properties, had good slip-casting properties and were able to perform well in pressure-cast processing. For lower-quality tableware, Furlong used kaolin grades that gave a less white fired colour and did not have as good plastic and slip-casting properties.
 - (b) Steelite told us that the key characteristics of the kaolin grades it purchased were [REDACTED].
 - (c) Global said that the important characteristics of the kaolin grades it used were their plasticity, their fired contraction, their casting properties and their iron content.
 - (d) Dudson submitted that [REDACTED].
12. Sanitaryware customers indicated that what was important were the casting properties of kaolin. Ideal Standard said that kaolin was required to give the piece its ability to cast and to control the casting rate. It explained that the type and quantity of kaolin used varied depending on the production process being utilized (eg whether it was traditional sanitaryware casting that utilized plaster moulds or high-pressure casting that utilized resin moulds). Ideal Standard submitted that the key characteristic of the grades it purchased from Imerys and Goonvean was their casting rate while the grade bought from Sibelco was a high-pressure cast grade.

Relevance of formulations

13. Kaolin is only one of the ingredients used in formulations, and we understand that its performance in the final product will depend on other inputs used, the mix, the

production process (ie the 'recipe'). Therefore kaolin characteristics cannot be considered in isolation, since what matters to the customers is how kaolin performs in the product formulation. We review the evidence we have received in relation to this point below.

14. In relation to sanitaryware and tableware, the main parties submitted that a number of other minerals were used in the production of sanitaryware and tableware, including ball clays, talc, quartz, feldspar and alumina. They explained that:
 - ball clays provided good rheological stability for casting applications such as sanitaryware or high plasticity, strength and firing properties for tile applications;
 - quartz acted like a filler in ceramics, contributing with the other mineral components of a ceramic formulation to maintain the shrinkage during firing; and
 - in ceramics, feldspar was widely used as a flux, lowering the vitrifying temperature of a ceramic body during firing and forming a glassy phase.
15. In relation to paper applications, the main parties submitted that other industrial materials could be used as alternatives to kaolin in paper-filler applications, such as talc (or magnesium silicate), ground calcium carbonate (GCC) and precipitated calcium carbonate (PCC).
16. In relation to performance-mineral applications, the main parties submitted that there were a number of minerals used in these products that could be alternatives to kaolin—these minerals included mica, diatomite, talc, GCC, ball clays, bentonite, as well as calcined kaolin. The main parties explained that customers could reformulate their recipes to change the proportion of kaolin used in, for example, paints/coatings and rubber applications.
17. Based on third party evidence, we understand that the proportion of kaolin content (and thus the proportion of input cost it represents) can vary across end-products, with other minerals and chemicals being used together with kaolin in varying proportions. Kaolin content can be as low as a couple of per cent to up to 40 per cent or more, depending on application and the quality and properties desired in the final product. Third parties indicated that changing kaolin content or kaolin product might mean a reformulation of the whole recipe and adjusting other inputs or production processes, although in some instances there might be kaolin grades available that allowed a one-to-one substitution (although this would still require some reformulation).

Properties of Imerys and Goonvean kaolin grades

18. Here we compare the key characteristics of kaolin grades produced by the main parties in the UK, based on product specification data. This provides an overview of how kaolin grades supplied in the UK differ in terms of properties that are important in the various applications.

Sanitaryware and tableware kaolin grades

19. Figures 1 and 2 below show plasticity and particle size characteristics of Imerys's and Goonvean's tableware and sanitaryware kaolin grades, respectively. We observe variation of these characteristics across the different grades and between the parties. Main observations include:

(a) tableware grades tend to have higher plasticity and finer particle sizes than sanitaryware grades, although some of the lower-end tableware grades have similar characteristics as the higher-end sanitaryware grades; and

(b) [REDACTED]

FIGURE 1

Plasticity and particle size of main party tableware kaolin grades

[REDACTED]

Source: CC analysis of Imerys and Goonvean data.
Note: D = Diamond.

FIGURE 2

Plasticity and particle size of main party sanitaryware kaolin grades

[REDACTED]

Source: CC analysis of Imerys's and Goonvean's data.
Note: D = Diamond.

20. Figure 3 shows firing properties of Imerys's and Goonvean's tableware kaolin grades, respectively: contraction and brightness when fired at 1,180°C. We observe variation of these characteristics across the different grades and between the parties. Imerys's [REDACTED] and Goonvean's [REDACTED] are at the higher end of tableware grades, both having superior fired brightness, with [REDACTED]¹ (it has a particularly low content of iron oxide which, we understand, contributes to its exceptional fired brightness).

FIGURE 3

Fired properties of main party tableware kaolin grades

[REDACTED]

Source: CC analysis of Imerys's and Goonvean's data.
Note: D = Diamond.

Paper-filler and performance-mineral application kaolin grades

21. Figures 4 and 5 show brightness and particle size characteristics of Imerys's and Goonvean's paper-filler and performance-mineral application kaolin grades, respectively.² We observe variation of these characteristics across the different grades and between the parties. Main observations include:

(a) There are a number of slightly different yet similar Imerys and Goonvean paper-filler and performance-mineral grades [REDACTED]—eg Imerys's [REDACTED] and Goonvean's [REDACTED], Imerys's [REDACTED] and [REDACTED] and Goonvean's [REDACTED] and [REDACTED] (also [REDACTED]).

(b) [REDACTED]

¹ [REDACTED]

² Here we did not include [REDACTED].

- (c) There is quite a significant variation in the properties of kaolin grades used in performance-mineral applications, ranging from relatively low-brightness, coarse particle [REDACTED] and [REDACTED] to the relatively high-brightness and fine particle size [REDACTED] and [REDACTED].³

FIGURE 4

Brightness and particle size of main party paper-filler kaolin grades

[REDACTED]

Source: CC analysis of Imerys's and Goonvean's data.
Note: P = Platinum.

FIGURE 5

Brightness and particle size of main party performance-mineral kaolin grades

[REDACTED]

Source: CC analysis of Imerys's and Goonvean's data.
Note: O = Opal, C = Crystal. [REDACTED]

22. In relation to this analysis of product characteristics, the main parties noted that the analysis was based on the specifications for each grade rather than the typical brightness and particle size levels for the products actually produced. The main parties told us that the specifications of the final products could vary considerably. [REDACTED]
23. Figure 6 shows the main parties' own analysis of the characteristics of Imerys and Goonvean performance-mineral grades, [REDACTED]. For example, Supreme is at the very fine particle size and high-brightness end of the spectrum. [REDACTED]

FIGURE 6

Properties of Imerys and Goonvean performance-mineral grades

[REDACTED]

Source: Main parties.

Other dimensions of the product

24. Other than kaolin's chemical, physical and mineralogical properties, and price, there are other aspects of kaolin supply that are important to customers. These are: product form, packaging, and delivery and logistics.

Product form

25. Imerys explained to us that customers generally had a preference for a particular form of kaolin product, depending upon the applications for which the kaolin was to be used and the processes they used for these applications. Imerys told us that paper-filler, ceramics and some paint customers required kaolin to be in a slurry

³ [REDACTED]

form, and that performance-minerals customers, which used kaolin as a functional filler in plastics, rubbers, some paints and adhesives, required dry powder form.

26. In relation to the different forms of the product, Imerys explained that they differed principally in their moisture content. The basic dried product forms, such as lump, tube press or noodle (which were least expensive to produce), had moisture content of between 6 and 17 per cent. Powder, which was produced from dried and milled-up lump, tube-pressed or noodle product, had about 1 per cent moisture. Slurry, produced from lump of tube product mixed with water and chemical additives, had moisture content of about 35 to 45 per cent.
27. We understand that all the UK producers can supply kaolin in a basic dried form and in powdered form. Imerys can supply kaolin in slurry form, but Goonvean submitted that it could not supply grades in slurry forms as it lacked the relevant processing equipment. We understand that it supplies paper-filler kaolin to [REDACTED], which uses its slurring facilities in order to sell kaolin to Billerud in a slurry form.

Product consistency

28. Some customers noted that product consistency might be important, ie it was important that kaolin characteristics and performance did not vary much between any two deliveries of kaolin.

Deliveries and packaging

29. Customers differ significantly in the packaging of kaolin that they receive and the frequency of deliveries, depending on their usage of kaolin, logistics arrangements and storage facilities. For example, customers that do not have storage facilities but consume large volumes may need frequent and/or just-in-time deliveries of kaolin.

Substitutability of kaolin grades by customers

30. The main parties told us that they supplied a number of grades which were used in both [REDACTED], including Imerys's [REDACTED] and Goonvean's [REDACTED], and in both sanitaryware and tableware applications, including Imerys's [REDACTED] and Goonvean's [REDACTED].
31. The main parties submitted that a distinction should be drawn between what they described as premium and commodity performance-mineral kaolin grades. They stated that commodity kaolin grades required less sophisticated processing and had lower brightness and coarser average particle sizes. They told us that they considered Speswhite to be a premium grade and that it did not compete with commodity performance-mineral grades.
32. Tables 1 and 2 show Imerys's and Goonvean's top 15 kaolin grades by sales volume in the UK (total sales from 2008 to 2012), indicating for which applications they were sold.

TABLE 1 Imerys's sales of its top 15 UK kaolin grades by application, 2008 to 2012

Kaolin grade	tonnes					
	SW	TW	PF	PC	CPM	PPM
Capim DG	[X]	[X]	[X]	[X]	[X]	[X]
Supreme	[X]	[X]	[X]	[X]	[X]	[X]
Speswite	[X]	[X]	[X]	[X]	[X]	[X]
Polwhite B	[X]	[X]	[X]	[X]	[X]	[X]
Polwhite E	[X]	[X]	[X]	[X]	[X]	[X]
NSC	[X]	[X]	[X]	[X]	[X]	[X]
SP	[X]	[X]	[X]	[X]	[X]	[X]
Regal	[X]	[X]	[X]	[X]	[X]	[X]
Supercast	[X]	[X]	[X]	[X]	[X]	[X]
Intrafill 60	[X]	[X]	[X]	[X]	[X]	[X]
SSP	[X]	[X]	[X]	[X]	[X]	[X]
Capim NP	[X]	[X]	[X]	[X]	[X]	[X]
Treviscoe	[X]	[X]	[X]	[X]	[X]	[X]
IFE	[X]	[X]	[X]	[X]	[X]	[X]
Grolleg	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of Imerys's data.

Note: SW = sanitaryware applications, TW = tableware applications, PF = paper-filler applications, PC = paper-coating applications, CPM = 'commodity' performance-mineral applications, PPM = 'premium' performance-mineral applications.

TABLE 2 Goonvean's sales of its top 15 UK kaolin grades by application, 2008 to 2012

Kaolin grade	tonnes				
	SW	TW	PF	CPM	LS
Diamond Tableware	[X]	[X]	[X]	[X]	[X]
Crystal Sheen	[X]	[X]	[X]	[X]	[X]
Opal Beta	[X]	[X]	[X]	[X]	[X]
Platinum Jubilee	[X]	[X]	[X]	[X]	[X]
Diamond Blend 270	[X]	[X]	[X]	[X]	[X]
Diamond Star	[X]	[X]	[X]	[X]	[X]
Opal Omega	[X]	[X]	[X]	[X]	[X]
CCVR	[X]	[X]	[X]	[X]	[X]
Opal Gamma	[X]	[X]	[X]	[X]	[X]
Diamond Porcelain	[X]	[X]	[X]	[X]	[X]
Opal Sigma	[X]	[X]	[X]	[X]	[X]
Diamond Swift	[X]	[X]	[X]	[X]	[X]
BPLK	[X]	[X]	[X]	[X]	[X]
Diamond DTC	[X]	[X]	[X]	[X]	[X]
Platinum SC	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of Goonvean's data.

Note: SW = sanitaryware applications, TW = tableware applications, PF = paper-filler applications, CPM = 'commodity' performance-mineral applications, LS = life-science applications.

33. We analysed in more detail the extent to which different grades are sold to be used in different applications, and in this we considered main party sales beyond the UK in order to get a more general picture. We looked at kaolin grades with total UK sales of at least 100 tonnes in the period from 2008 to 2012. For each of these grades, we added total sales volumes in the UK and exports from the UK between 2008 and 2012 by application, as indicated in parties' data. We looked at only those grades which were sold to at least one application.

34. In relation to Imerys's grades we found the following:

(a) Some grades, such as [X], are used both tableware and sanitaryware applications. In particular, 60 per cent of sales of [X] go to sanitaryware, and 40 per cent go to tableware.

(b) [X]

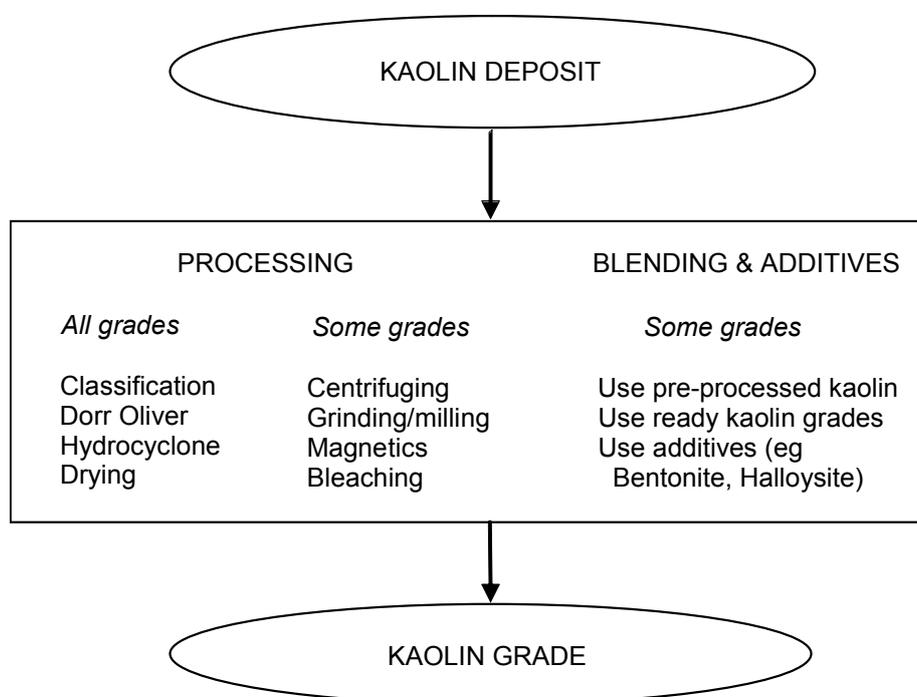
35. In relation to Goonvean's grades we found the following:
- (a) Some kaolin grades from Goonvean's [X] range are used in both sanitaryware and tableware.
 - (b) [X]
 - (c) [X]

Kaolin production

36. The main factors that determine what kaolin grades can be produced are the characteristics of the kaolin deposits and the processing technology/equipment that is applied to these. Figure 7 illustrates the process of producing kaolin grades; a more detailed description is provided in Appendix C.

FIGURE 7

Kaolin production process flowchart



Source: CC.

37. Appendix C contains details of the various processing techniques that can be adopted. Table 3 below provides details as to what processing each party is able to conduct based on the plant and equipment available to them. This shows that Imerys has more extensive processing techniques available.

TABLE 3 Processing techniques available to the parties

Processing technology	Imerys	Goonvean
Hydrocyclones	[X]	[X]
Centrifuges	[X]	[X]
Sandgrinding	[X]	[X]
Reductive bleaching	[X]	[X]
Oxidative bleaching	[X]	[X]
Magnetic separation	[X]	[X]
Centrifuge (dewatering)	[X]	[X]
Filter press	[X]	[X]
Tube press	[X]	[X]
Fluid bed dryer	[X]	[X]
Band dryer	[X]	[X]
Combined heat and power	[X]	[X]

Source: The parties.

Imerys's manufacturing process

38. [Annex 1](#) sets out a process flow chart that outlines the various products that Imerys supplies along with the 'raw kaolin' input (ie, kaolin deposit) used to manufacture them, the processing that is required and any additives used.
39. In many instances the same 'raw kaolin' is used to manufacture different final kaolin grades. This is true within applications and across applications. For example, [X] grades each use the same 'raw kaolin' and are subject to the same processing but what differentiates these grades from one another is the ratio of 'raw kaolin' that is blended in and the extent of the processing that is applied to each of the various 'raw kaolins'.
40. The parties told us that, although each deposit of kaolin had particular characteristics, there was nothing unique in the chemical composition or characteristics (in terms of whiteness brightness, particle size and flow) of Cornish kaolin. Imerys noted, however, that the Goonvean 'G1' reserve was somewhat an exception to this as it was particularly suited to pharmaceutical applications given its low arsenic and dioxin content. Furthermore, Imerys noted that high-quality performance-mineral kaolin grades—ie such as [X]—were dependent on the availability of suitable mineral deposits, which could be found in Imerys's [X] pits and Goonvean's [X] pit.
41. Imerys told us that it had switched its processing technology on a number of occasions in order to improve efficiency, profitability and the sustainability of existing products. [X]

TABLE 4 Imerys grades that is says could be produced with minimal additional processing

Grade	New grade that can be produced	What additional processing is required?
<i>Paper filler</i>		
[REDACTED]	[REDACTED]	[REDACTED]
<i>Sanitaryware</i>		
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
<i>Tableware</i>		
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

Source: Imerys.

Note: SW = sanitaryware applications, TW = tableware applications, PF = paper-filler applications, CPM = 'commodity' performance-mineral applications, LS = life-science applications.

42. Imerys noted that [REDACTED], the chemical make-up of the kaolin used was not important, as no 'firing' took place; it was the physical properties relating to brightness, abrasion and particle size which were important. In this connection, [REDACTED].
43. Imerys also noted that [REDACTED] Imerys previously produced these grades from the Lee Moor pit prior to its lease arrangements with Sibelco. Imerys previously used kaolin from its Devon deposits (now available to Sibelco) for the production of its Polwhite B and Polwhite E grades for performance-mineral applications and had switched production between its Cornish and Devon deposits on a number of occasions without notifying customers. Imerys's current formulation of [REDACTED] came from a number of different reserves. However, we note that processing capabilities are also important when considering whether a kaolin grade of given qualities can be economically produced by a supplier.

Goonvean's production process

44. [Annex 2](#) sets out the various products that Goonvean supplies and the processing that is required.
45. Goonvean does not have many of the processing technologies used by Imerys and where it has the same technology, this is typically on a smaller scale. For example, [REDACTED].
46. Goonvean noted that a supplier with the processing equipment to supply paper filler had all the equipment required to supply all the other grades, with the limited exception that centrifuges and magnetic separation were required for higher-value tableware grades and certain performance-mineral grades.
47. Goonvean's 'G1' reserves were used in low-value paper-filler and sanitaryware applications until around 2000 when it ceased to use G1 in these applications to conserve its reserves, as alternative deposits could readily be used for these applications.
48. Table 5 provides examples of a number of Goonvean kaolin grades that Goonvean said could be processed to create alternative grades.

TABLE 5 **Goonvean grades that could be produced with minimal additional processing**

Grade	New grade that can be produced	What additional processing is required?
<i>Paper filler</i>		
[X]	[X]	[X]
<i>Sanitaryware</i>		
[X]	[X]	[X]
[X]	[X]	[X]
<i>Tableware</i>		
[X]	[X]	[X]
[X]	[X]	[X]
<i>CPM</i>		
[X]	[X]	[X]

Source: Goonvean.

Note: SW = sanitaryware applications, TW = tableware applications, PF = paper-filler applications, CPM = 'commodity' performance-mineral applications, LS = life-science applications.

Third party views

Sibelco

49. Sibelco told us that each kaolin deposit contained different chemical and physical properties but a combination of processing and blending (and additives) could be applied to these to achieve the desired chemical and physical properties required in an end-product. Processing and blending could be switched to produce more or less of one or another kaolin grade, given the deposits available.
50. Sibelco noted that it could produce the majority of the products that Imerys and Goonvean supplied from the kaolin they had access to (with additional processing, blending etc) but that it did not do so as producing these products was not part of its strategy and might not be economically viable.
51. Sibelco stated that if required it might be able to purchase the appropriate kaolin that it required to manufacture a particular product from other producers (in the UK or abroad).

Goonvean Holdings Ltd

52. Goonvean Holdings Ltd (Goonvean Holdings) stated that there was nothing crucially unique to the various deposits worked by Goonvean (other than with reference to pharmaceutical products) and that 'raw' input kaolin could be substituted to manufacture substitutable final products with appropriate processing.
53. Goonvean Holdings also noted that:
 - (a) If a 'raw' kaolin was substituted there might in some cases need to be alterations made to the processing of this kaolin (more or less processing depending on the properties of the substitute) and this would have cost implications.

(b) It was not thought to be possible to substitute the 'G1' Goonvean reserves as the 'raw' kaolin input in the manufacture of pharmaceutical products as the naturally low levels of arsenic, dioxins and heavy metals in this deposit was not replicated in other UK reserves. Additionally, extra processing was not possible as these elements could not be removed using the processing techniques available.

The range of products supplied by Imerys and the kaolin input and processing techniques adopted



The range of products supplied by Goonvean and the kaolin input and processing techniques adopted

[✂]

Counterfactual

Introduction

1. This appendix presents our supporting analysis of the counterfactual.
2. We first summarize the views of the main parties and third parties on the performance of Goonvean and possible counterfactual scenarios. We then set out our analysis supporting our assessment in the main report of:
 - (a) the financial performance of Goonvean; and
 - (b) the remaining G1 reserves in Goonvean pit and the impact on Goonvean's strategy.

The view of the parties

3. In addition to their initial submission and responses to our questionnaires, working papers and provisional findings, the parties submitted a number of reports discussing or related to issues in the counterfactual, including:
 - (a) a report from AlixPartners, *Goonvean's financial position, the counterfactual to the merger, and merger efficiencies*, dated 11 June 2013 ('AlixPartners' report');
 - (b) an addendum to the AlixPartners report, *Addendum to the report submitted to the CC on 11 June 2013 regarding Goonvean's financial position and the counterfactual to the merger*, dated 4 July 2013 ('AlixPartners' addendum report');
 - (c) a report from SRK Consulting, *Independent resource review for Goonvean pit, Cornwall, UK* (dated 11 June 2013);
 - (d) a report by PDP Green Consulting surveying the Greensplat processing plant (submitted on 10 July);
 - (e) a further report from AlixPartners, *Response to the provisional findings of 24 July 2013*, dated 6 August 2013 ('AlixPartners' third report');
 - (f) a letter from SRK Consulting dated 7 August 2013 which commented on the provisional findings; and
 - (g) a note from PDP Green Consulting dated 1 August 2013 which commented on the provisional findings.
4. These submissions collectively covered the following issues:
 - (a) the financial performance of Goonvean and Goonvean as a stand-alone kaolin business (ie in its post-acquisition form);
 - (b) the remaining G1 reserves in Goonvean pit and the impact on Goonvean's strategy;
 - (c) the need for additional capital expenditure, most notably in the Greensplat processing plant/equipment;

- (d) other possible strategic changes; and
 - (e) alternative purchasers of the business.
5. We set out the parties' views on each of these areas in turn.

The financial performance of Goonvean

6. Prior to its acquisition by Imerys, Goonvean comprised a kaolin (mining and processing) division and a secondary aggregates division which were fully integrated with one another.
7. The parties did not initially argue that Goonvean was a failing firm but said that the business had struggled in recent times because the kaolin part of the business had incurred losses in FY09, FY10, FY11 and FY12. They subsequently said that Goonvean was no longer viable and would have exited in the foreseeable future. They argued that Goonvean was already suffering from increased costs and downward pressure on prices which could affect its ability to generate the necessary revenues to cover its high fixed costs. They submitted that consequently it was highly unlikely that Goonvean would continue to operate on its existing basis and that once its economically-accessible reserves of G1 deposits had been exhausted, there would have been a real prospect of Goonvean ceasing kaolin operations entirely and its revenues from sales to other, lower-value, applications would not have been sufficient to cover its high fixed costs.
8. The parties submitted that the counterfactual to the transaction would not be the maintenance of the competitive status quo, but a scenario in which the parties' output would fall and prices accordingly increase due to rising costs and poor profitability/losses. The parties said that this was particularly the case as large capital expenditure would be required in the near future to address the minimal capital expenditure made by Goonvean over previous years and Goonvean had a large pension deficit which needed to be funded.
9. The parties said that declining reserves would also lead to Goonvean exiting various market segments (specifically, tableware) and potentially exiting kaolin production altogether. The parties said that Goonvean had decided to limit use of its G1 reserve to high-value life-science applications in order to conserve its reserves and that Goonvean would not have been viable as an independent business once its G1 reserves were exhausted.

Conclusions of the AlixPartners report

10. The AlixPartners report, on behalf of the parties' principally focused on assessing Goonvean in its post-acquisition form as a kaolin-only business and not in its pre-acquisition form whereby it operated as a combined kaolin and secondary aggregates business. The AlixPartners addendum report examined the financial performance of Goonvean's combined kaolin and secondary aggregates business over a ten-year period and looked at forecast profitability.

Kaolin-only Goonvean

11. AlixPartners concluded in its report that based on its analysis Goonvean's kaolin-only business was not viable on a stand-alone basis. AlixPartners referred to the following to support its conclusion on the kaolin-only business:

- (a) The stand-alone business had incurred significant operating losses in each of the last five years. It said that this conclusion was unaffected by the allocation of overheads between the kaolin and secondary aggregates business.
- (b) In the year ended 2013, kaolin sales volumes were forecast to reduce from [X] tonnes to [X] tonnes (volumes were roughly [X] tonnes a year prior to 2008).
- (c) Over the last four years, Goonvean's production costs had risen, its prices had been flat and many (60 per cent) of its kaolin products had been sold at less than cost.
- (d) For the year ended 2013, the Goonvean business was forecast to make a loss of £[X]. AlixPartners said that this loss did not reflect the profitability (or lack thereof) of Goonvean's kaolin business on a stand-alone basis because:
- (i) A senior management team would need to be recruited, with salaries and benefits costing in the region of £[X] a year.
 - (ii) Imerys now bore various costs on Goonvean's behalf, most notably insurance (£[X] a year) and payroll costs (£[X] a year).
 - (iii) Imerys had provided Goonvean with a £[X] credit facility at an interest rate lower than a market rate of [X] (which would expire on 31 December 2013) and as at 31 May 2013 Goonvean had already required some £[X] of funding under this facility.
 - (iv) Included in the 2013 forecast were sales of [X]. These profits were wholly unconnected to Goonvean's kaolin extraction and processing activities and therefore were not relevant to any analysis of the viability of Goonvean maintaining its kaolin operations.
 - (v) A detailed geological analysis of Goonvean's reserves conducted by SRK Consulting concluded that Goonvean's reserves of G1 would be exhausted within two years at current forecast extraction rates.
 - (vi) Much of the existing plant and machinery at Goonvean's Greensplat processing plant was very old and required refurbishment at an estimated cost of £[X] million over the next two years that Goonvean would struggle to afford.
 - (vii) Goonvean had delayed certain capital expenditure, including the purchase of [X], which would need to be made in the second half of 2013 at a cost of £[X]. In addition, if Goonvean were to continue to operate on a stand-alone basis, an estimated £[X] million in capital expenditure would be required within the next two years. Furthermore, AlixPartners noted that Goonvean would have to fund this through external finance given its weak cash position post-transaction (and that such external finance would be difficult to obtain at any interest rate).
 - (viii) Goonvean had a significant liability in the form of a pension deficit of [X] which would need to be funded (£[X] based on a recent assessment by Imerys's actuaries).

Combined kaolin and secondary aggregates/pre-acquisition Goonvean

12. Despite performing the majority of its assessment of Goonvean in its post-acquisition form as a kaolin-only business, AlixPartners also provided analysis of the pre-acquisition business based on the 2008 to 2012 management accounts. This analysis is presented in Table 1.

TABLE 1 Net sales and operating profit (loss) of Goonvean pre-acquisition

	£'000				
	FY08	FY09	FY10	FY11	FY12
Kaolin sales net of transport costs	[X]	[X]	[X]	[X]	[X]
Aggregate sales net of transport costs	[X]	[X]	[X]	[X]	[X]
Net sales (net of transport costs)	[X]	[X]	[X]	[X]	[X]
Contribution (after depreciation)	[X]	[X]	[X]	[X]	[X]
Central overheads	[X]	[X]	[X]	[X]	[X]
Operating profit/loss	[X]	[X]	[X]	[X]	[X]

Source: AlixPartners report dated 11 June 2013, Tables 3.1 and 3.2.

13. Table 1 presents Goonvean as loss-making on aggregate over the period from FY08 to FY12 (total loss £[X]). AlixPartners also noted that it would not be a rational strategy to operate a loss-making kaolin business to realize modest profits on aggregates. It said that it would have been more cost effective for Goonvean to acquire unprocessed secondary aggregates from a third party (which is how GAL has operated since the acquisition).
14. AlixPartners included in its report an estimation of the cash flow of Goonvean from FY08 to FY12. This is presented in Table 2.

TABLE 2 Goonvean FY08 to FY12 cash flow

	£'000				
	FY08	FY09	FY10	FY11	FY12
Opening cash balance (A)	[X]	[X]	[X]	[X]	[X]
Closing cash balance (B)	[X]	[X]	[X]	[X]	[X]
Cash flow during year (C=B-A)	[X]	[X]	[X]	[X]	[X]
Dividends paid (D)	[X]	[X]	[X]	[X]	[X]
Adjusted cash flow (E=C+D)	[X]	[X]	[X]	[X]	[X]

Source: AlixPartners report dated 11 June 2013, Table 3.6.

15. AlixPartners noted that the Goonvean cash balance decreased in FY08 and FY09 and that Goonvean was cash generative from FY10 to FY12. AlixPartners said that it understood that the cash on hand prior to 2008 included receipts from the sale of Bodelva pit to create the Eden project in August 1998 and cash generated from the operation of Goonvean Fibres Limited (which was a subsidiary until October 2010).
16. AlixPartners also noted that Goonvean's capital expenditure in the last five years had been less than the required amount due to Goonvean's policy of [X]. In the AlixPartners addendum report, AlixPartners compared the average capital expenditure for the period from 2008 to 2012 with the period from 2003 to 2007 and noted that capital expenditure was on average £[X] less per year. AlixPartners also noted that the annual average capital expenditure was less than the annual

depreciation charge.¹ It said that this was such that the Goonvean assets had been ageing and the depreciation charge no longer reflected the full annual lifecycle cost of operating the business (see Table 3). This issue is discussed further below in the need for capital expenditure on the Greensplat processing plant equipment and building.

TABLE 3 Goonvean FY08 to FY12 capital expenditure

	£'000				
	FY08	FY09	FY10	FY11	FY12
Capital expenditure (actual)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Depreciation	1,822	1,876	1,808	1,655	1,581

Source: AlixPartners report dated 11 June 2013, Table 3.9.

Conclusions of the AlixPartners addendum report

17. AlixPartners' addendum report principally focused on assessing Goonvean's financial performance (including cash flow and capital expenditure) for the last ten years in its pre-acquisition form in which it operated a combined kaolin and aggregates business, as well as the forecast profitability of such a combined business in 2013 and 2014.
18. AlixPartners' addendum report reviewed the historical performance of the Goonvean business by splitting the last ten years into two five-year periods as AlixPartners noted that there was a structural break in the performance of the business between these two time periods. The first period ran from 2002/03 to 2006/07 and was referred to as 'Period 1', and the second spanned 2007/08 to 2011/12 and was referred to as 'Period 2'. AlixPartners specifically noted that there had been a reduction in production between these two periods—in period 1 Goonvean produced approximately [REDACTED] tonnes a year whereas in period 2 production volumes fell to around [REDACTED] tonnes a year.
19. Tables 4(a) and (b) show the high-level financial analysis contained in AlixPartners' addendum report that outlines the performance of Goonvean during Period 1 and Period 2.

TABLE 4(a) Summary of Goonvean's management accounts, 2002/03 to 2006/07

	£'000					
	2002/03	2003/04	2004/05	2005/06	2006/07	Total
Net sales	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Contribution after depreciation	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Central overheads	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Operating income/loss	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Sales volumes (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: AlixPartners' addendum report dated 4 July 2013.

¹ In AlixPartners' third report, it said that from FY08 to FY12, Goonvean's capital expenditure on plant and machinery averaged [REDACTED] per cent of depreciation on plant and machinery.

TABLE 4(b) Summary of Goonvean's management accounts, 2007/08 to 2011/12

						£'000
	2007/08	2008/09	2009/10	2010/11	2011/12	Total
Net sales	[X]	[X]	[X]	[X]	[X]	[X]
Contribution after depreciation	[X]	[X]	[X]	[X]	[X]	[X]
Central overheads	[X]	[X]	[X]	[X]	[X]	[X]
Operating income/loss	[X]	[X]	[X]	[X]	[X]	[X]
Sales volumes (tonnes)	[X]	[X]	[X]	[X]	[X]	[X]

Source: AlixPartners' addendum report dated 4 July 2013.

20. AlixPartners noted that during Period 1, Goonvean made total net sales of £[X] million with an operating income of £[X] million. It said that Goonvean generated free cash operating cash flow of £[X] million over the period.
21. In Period 2, Goonvean reported total net sales of £[X] million with an operating loss of £[X]. AlixPartners noted that although net sales declined by £[X] (or roughly £[X] per year), operating income dropped by £[X] (or roughly £[X] per year) highlighting increased costs.
22. AlixPartners added that Goonvean's kaolin production costs per tonne increased sharply by £[X] (and did not fall below this level during Period 2), whilst its average selling price increased by only £[X]. It said that Goonvean generated free cash operating cash flow of negative £[X] over the period but that this cash flow loss was understated due to cumulative capital expenditure in Period 2 being around £[X] less than in Period 1.
23. AlixPartners highlighted that 2008/09 was a particularly poor year for Goonvean as a result of the financial crisis. AlixPartners noted an operating loss in this year of approximately £[X] (see Table 1).² Goonvean recovered from this tough trading period in 2009/10 and 2010/11 with an operating profit of £[X] and £[X] generated in these periods respectively but losses of £[X] were made in 2011/12 (see Table 1).
24. AlixPartners examined the forecast profitability of a combined kaolin and aggregates business (assuming [X] per cent of the overhead costs are allocated to kaolin and [X] per cent to aggregates) and found that, after restructuring (involving additional redundancy costs of £[X]), the kaolin business would generate a forecast operating loss of £[X] in 2013, which would increase to £[X] in 2014. It said that it would not be a rational strategy to operate a heavily loss-making kaolin business to realize modest profits on aggregates, particularly as it would be more cost effective for the business to acquire the unprocessed secondary aggregates from a third party. AlixPartners also said that it was highly sceptical that a commercially rational owner of such a business would choose to make the necessary capital expenditure of £[X] plus a further £[X] over the next three years as there would not be any realistic prospect of a return being made.

Additional points in AlixPartners' third report and the parties' response to provisional findings

25. In AlixPartners' third report, it commented further on the financial performance of Goonvean. It said that:

² In AlixPartners' third report, it noted that Goonvean Fibres Limited would have contributed materially to the cash flows of Goonvean (it estimated £1,244,117 over FY08 and FY09).

- (a) Authorized capital expenditure had been greater than actual capital expenditure every year over the last five years.
 - (b) The FY11 dividend of £2.2 million was paid to settle intercompany debts between Goonvean and its parent company and these amounts should not be considered as part of the cash reserves when evaluating whether Goonvean had cash reserves to cover losses and pay for required expenditures.
 - (c) Despite holding a cash balance of more than £5.0 million for the period from FY07 to FY11, the fact that Goonvean did not spend the required capital expenditures was indicative that the shareholders were not willing to support the business to the degree that it needed to be supported.
 - (d) Goonvean's average annual return was 1 per cent on capital employed over the period from FY09 to FY12. AlixPartners looked at two capital expenditure scenarios (one of £[redacted] million in Greensplat and one of £[redacted] million in Greensplat plus £[redacted] million in other sustaining capital expenditures) and found that it was not likely that Goonvean would have generated sufficient cash flow to provide a reasonable return on any invested funds in either of these scenarios.
26. The parties noted that the shareholders of Goonvean had little interest in the business and were unwilling to invest in it.

The remaining G1 reserves in Goonvean pit and the impact on Goonvean's strategy

27. Data from the parties showed us that G1 from Goonvean pit is used in:
- (a) [redacted] life sciences products [redacted]; and
 - (b) [redacted] tableware products [redacted].
28. The parties initially submitted to us that, based on an internal Goonvean document dated October 2012, Goonvean's existing G1 reserves were [redacted] tonnes (after refining)³ and that this would only give 3.53 years of reserves of the G1 deposit if Goonvean had continued 'to produce the life science and tableware grades which contain the G1 deposit at current levels'. This was based on an assessment using budgeted tableware and life sciences tonnes for FY13 ([redacted]). This production required [redacted] tonnes of G1 per year.
29. Since the initial submission a consultancy firm (SRK Consulting Ltd) was engaged by the parties to perform an in-depth analysis of the remaining G1 reserves. It used drilling results from Goonvean pit conducted by Boart Longyear during 2013 in order to meet Imerys's statutory reporting requirements. SRK's report, dated 11 June 2013, found that there was 'less than 2 years of G1 mineralisation remaining at current planned production rates'. This figure was based on:
- (a) Measured G1 matrix reserves of [redacted] tonnes with a further indicated G1 reserve of [redacted] tonnes and further inferred G1 reserves of [redacted] tonnes;
 - (b) G1 [redacted] being capable of yielding [redacted] per cent hydrocycloned product and [redacted] per cent G1 product;

³ [redacted] tonnes before refining.

- (c) Goonvean's 2013 mining costs and an assumed price for G1 of £[redacted] per tonne, which was based on the sales mix of Goonvean's products;
- (d) an optimization model using these assumptions indicating that there were [redacted] tonnes of matrix which could be economically mined, producing [redacted] tonnes of refined G1 product; and
- (e) based on Goonvean's budgeted G1 requirement for 2013, which was [redacted] tonnes, this generated a figure of 1.7 years of G1 reserves remaining at current rates of production (ie [redacted]).
30. SRK further noted that:
- while there may be material remaining at the base of the pit ... this [redacted] becomes increasingly uneconomic if longer life is considered largely because the negative operating margin and the amount of waste required to be removed increases significantly as the pit is deepened.
31. SRK said that its estimate of remaining G1 reserves benefited from the availability of significantly more and better-quality data and better modelling software than was available to Goonvean previously. It therefore said that its estimate was more reliable.
32. The parties said that Goonvean had already explored alternatives to using [redacted].
33. We understand from Goonvean that the cost of this processing equipment is substantial. Goonvean said, for example, that a magnet cost in the region of £[redacted] million and the installation of this magnet into the processing plant cost between £[redacted] million and £[redacted] million. A centrifuge cost less than this and was estimated at about £[redacted] by Imerys.
34. Imerys said that it believed that for all of Goonvean's current tableware range produced with some proportion of [redacted], Imerys had suitable reserves which, when processed using magnets, would replicate the Goonvean product range.
35. The parties said that, without a rapid change in strategy, Goonvean would have exhausted its G1 reserves and exited both the tableware and life-science markets.
36. The parties told us that given the diminishing level of G1 reserves, Goonvean's management had [redacted].
37. The parties also pointed to the following evidence that this strategy had begun to be put into effect:
- (a) [redacted] witness statement stated that: [redacted].
- (b) The parties told us that Goonvean had already [redacted].
- (c) [redacted]
- (d) [redacted]
38. The parties said that Goonvean had informed key customers representing [redacted] per cent of its UK tableware sales by value that its G1 reserves were running out and that it would shortly exit the tableware market. They said that:

(a) Goonvean had informed [REDACTED] in April 2013 that a key feed material for its tableware grades was close to exhaustion such that Goonvean would be ceasing to produce and supply these tableware grades within the next two years.

(b) [REDACTED]

39. Goonvean said that in notifying customers it would 'give customers as much time as possible to reformulate and change'. Goonvean told us that it was its practice to give customers 12 to 18 months' notice.

40. [REDACTED] The parties said that by selling at a loss, whether or not it generated revenue, Goonvean did not cover its costs of production and would be unable to continue in the market.

41. As well as estimating product profitability, Goonvean estimated the profit per tonne of G1 consumed per product (because the G1 content to manufacture each grade varied). On this basis, [REDACTED] was estimated to be the most profitable product that was G1 dependent. With the exception of [REDACTED], the [REDACTED] were the most profitable in absolute terms and in terms of margin per tonne of G1.

42. Table 5 presents the profitability of each G1 product as estimated by Goonvean.

TABLE 5 Estimated profitability of G1-dependent products

UK/non-UK	Grade	Volume (Mt)	Ex-works price	Cost of production	Margin (£/Mt)	Margin per tonne of G1 (Indicative formulation)	Margin per tonne of G1 (budget formulation)
<i>Life sciences</i>							
Non-UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Non-UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Sub-total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Sub-total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Tableware</i>							
Non-UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Non-UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Non-UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Non-UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Sub-total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Sub-total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Goonvean.

Notes:

- [REDACTED]
- The ex-works price includes only production costs and not any overheads or packaging costs etc.
- [REDACTED]

43. The parties considered whether Goonvean might focus on just [REDACTED]. They argued that this would not be viable because:

(a) For [REDACTED], there would be insufficient tonnage for an efficient production run and the storage costs would not be commercially sensible. Sales of [REDACTED].

(b) [REDACTED]

44. The parties also considered whether Goonvean would withdraw from UK customers last and said that this would have been an illogical strategy because:
- (a) UK sales of [REDACTED] grades were all either loss-making or marginally profitable in absolute terms, as well as being a highly inefficient use of G1.
 - (b) Certain overseas sales of the above grades were more profitable than UK sales.
 - (c) Supplying to UK customers alone would be impractical and inefficient due to the small volumes of each grade supplied in the UK.

The need for additional capital expenditure in Greensplat plant/processing equipment and building

45. AlixPartners noted that [REDACTED]. In light of this, AlixPartners noted that Goonvean anticipated that significant capital expenditure would be required within two years to maintain operations at Greensplat. AlixPartners said that Imerys's post-merger plans involved the closure of the Greensplat facilities, with processing being transferred to much more efficient and modern Imerys processing plants.
46. Whilst the parties initially submitted that the Greensplat plant would be [REDACTED], later Goonvean said that the refurbishment of the Greensplat plant was [REDACTED].
47. The parties subsequently submitted a report by PDP Green Consulting which surveyed the Greensplat processing plant. It found that [REDACTED]. In the response to the provisional findings, PDP Green Consulting further noted that:
- (a) It was highly unusual for such a significant level of damage to occur to a plant without earlier intervention and remediation.
 - (b) Any repairs would be likely to prove extensive, bordering on a substantial refurbishment, as the structure had potentially dangerous faults.
 - (c) It would cost £[REDACTED] million to repair the Greensplat plant to a level which would enable it to continue to be used safely with any degree of confidence for more than a year.
48. The parties said that if instead the Trelavour plant were to be upgraded, this would cost in excess of £[REDACTED] million to absorb the additional volumes from Greensplat.
49. [REDACTED]:
- (a) In its 2008 statutory financial statements, Goonvean disclosed in its business review that:

The risks to the business arising from the present financial climate have been appreciated by the Board, and decisions to conserve capital have been taken. Fortunately we have completed our programme of major capital expenditure and for the foreseeable future only essential capital projects will be authorised ...
 - (b) In the 2009 statutory financial statements business review, Goonvean stated that:

The Board does not anticipate that the effects of the recession will disappear quickly, and indeed reductions in some of our customer's production capacities will permanently reduce market demand. The

Board will continue the policy of restricting production to match demand, whilst minimising costs and pursuing [sic] changes to operating practices that improve efficiencies. Capital expenditure will be limited to essential items only, all major planned capital projects have been postponed until the [sic] next financial year.

(c) In the 2010 statutory financial statements business review, Goonvean further disclosed:

During the recession capital projects were delayed in order to preserve cash reserves. In 2010 some small items of capital were approved as confidence in trading improved. For 2011 it will be necessary to authorise capital on projects that are necessary to maintain our overall production capability in the long term, improve efficiencies and also release clay reserves.

50. The parties said that looking forward, even if Goonvean had limitless financial resources, such investment would not be commercially rational—there would not be a sufficient return to cover the capital expenditure.

Other possible strategic changes

51. With regard to the possibility of Goonvean producing PPM products, the main parties submitted that although Goonvean had suitable [REDACTED], it lacked the know-how and extensive processing facilities required to produce this grade. Goonvean said that it would not have been a commercial proposition for Goonvean to invest in advanced processing capabilities to develop the technology to produce high-quality products for specialty applications.

Alternative purchasers

52. The parties told us that the Goonvean board considered the option of seeking an alternative purchaser to Imerys but that an investment purchaser was considered unlikely and that Imerys's offer was likely to be the only reasonable opportunity and potentially the most attractive from a financial standpoint in light of the synergies available (see Appendices B and L for further details).
53. AlixPartners indicated that it considered that the prospect of a sale to another party was self-evidently close to nil. [REDACTED]

Third party views

Goonvean Holdings Ltd

54. GHL said that it had been a family-owned business for over 80 years and that the business had gone through some very difficult times, and in the past had made significant losses. It said that the shareholders had supported the business through these periods and taken a long-term view. It added that given the shareholders attitude and the cash reserves of GHL, losses may have been accepted unless the losses became so significant as to jeopardize the whole of the group of companies it controlled. In this regard, GHL noted that Goonvean had, in recent times, only been loss making in FY09 and FY12 and that it had continued to generate significant cash despite these losses. It said that it was a fully integrated kaolin and aggregates operation and that it was inconceivable that the kaolin business would have operated in isolation.

55. In summary, GHL told us that the board accepted that the immediate future would have been extremely challenging and significant changes would have been necessary in all aspects of the company but that the board was unanimous in its view that it would seek to ensure that the company would survive, although the prospects for the next few years appeared poor.

Strategy in the absence of a sale

56. GHL said that it had historically adopted a strategy that sought to maximize sales volumes and aimed at covering the fixed cost base of the business, even if this was at negative margins, with the higher-value products contributing to profit. GHL was aware of the shortcomings in this strategy and as such had started to seek out new markets (for example, animal feeds) giving volume sales at reasonable positive margins to replace loss-making commodity products, and also to push sales into new higher-value small-volume markets (life-science markets). It said that had it remained in private ownership a continuing shift towards higher-value more specialized products would have been essential but that developing these new market areas would have taken time, and it was unlikely that a significant shift would have occurred within one or two years.
57. GHL told us that thought had been given to reduced production capacity and major changes in overheads. GHL also told us that, absent the merger, Goonvean would, at some point, have faced some difficult decisions as a result of the condition of the Greensplat plant. The options would have been an expensive rebuild of the plant; or keeping the pit open but closing the Greensplat refining and drying plant and increasing capacity at the Trelavour plant. GHL said that the latter option was the most likely scenario but this would have been a difficult decision as it would have involved a reduction in overall capacity of around 20 per cent, which would have made it more difficult for the company to cover its fixed costs. GHL told us that it considered this a problem that Goonvean would have had to have faced in the future but not in the next five to seven years.
58. GHL said that should the Greensplat plant be refurbished, this would hinder operations, and instead GHL noted that it was likely that a new plant would be developed on a site adjacent to the current Greensplat plant. As an indicator of the possible capital investment level required, it noted that the approximate expenditure required to redevelop the Greensplat plant (and alongside this increase the processing capabilities) could be as much as £15–£20 million.
59. GHL told us that reducing overhead costs may have been necessary but very difficult to achieve in practice. It said that the business was already extremely lean and further savings would have had to be extremely radical, probably involving a complete change in senior management and outsourcing more management services. It said that by itself both downsizing and reshaping the business would not have guaranteed profitability; this would have also needed a shift in sales to new markets. It said that achieving all these changes would have been extremely difficult and would have required reasonable timescales.
60. With regard to Goonvean's pension deficit, GHL said that it had cash reserves in excess of the presently identified deficit but that if the liability became unmanageable at some point in the future it was probable that the scheme would close for future service.

Alternative purchasers

61. GHL told us that Goonvean did not market the business for sale as it was not actively seeking to dispose of the business. It added that it was the view of the Goonvean board that it would only consider a sale of the business should a worthy offer be received and there was a unanimous view among the board that there was no compulsion to sell. Previously the major shareholder had maintained that he did not wish to sell under any circumstances.
62. GHL said that it was difficult to conceive of any prospective purchaser other than Imerys. It said that an investment buyer would have been extremely unlikely, for all the reasons that Goonvean was considering a sale. It added that other kaolin competitors would have been unlikely to have wanted to make an offer. Moreover, it said that confidentiality was a significant concern for the board in order to protect the reputation and customer base of Goonvean as an independent family-run business. Given this, the board said that announcing a potential disposal on the open market was not an option it was prepared to consider.

Other third parties

63. Furlong told us that it had been informed that [REDACTED] but had interpreted this as an indication that its [REDACTED] supplies would be protected [REDACTED]. Dudson told us that Goonvean had increased its estimate of UK reserves above ten years.
64. Sibelco indicated that it would potentially have been interested in acquiring the Goonvean business (price dependent) had it known that it was available for sale.
65. In relation to Goonvean potentially supplying PPM products, [REDACTED] told us that it had trialled Goonvean's [REDACTED] due to price reasons. [REDACTED] said that the product trialled was not entirely suitable but that it thought Goonvean could improve it. [REDACTED] halted trialling the Goonvean product when the merger was announced.

Our analysis

66. In this section, we set out our analysis of the financial performance of Goonvean and the remaining G1 reserves in Goonvean pit.

Financial performance of Goonvean

67. It is not relevant to look separately at the historical financial performance of the separated kaolin business of Goonvean (ie Goonvean post-acquisition) because the business was only separated for the purposes of the transaction. Absent the merger, there is no evidence that it would have been operated in any way other than as an integrated kaolin and secondary aggregates business.
68. We set out some detail on Goonvean's historic performance in Table 6, which sets out sales, EBITDA and operating profit for FY09 to FY12.

TABLE 6 Goonvean FY09 to FY12 performance

	£'000			
	FY09	FY10	FY11	FY12
Kaolin sales (vol '000 tonnes)	[X]	[X]	[X]	[X]
Aggregate sales (vol '000 tonnes)	[X]	[X]	[X]	[X]
Kaolin sales	[X]	[X]	[X]	[X]
Aggregate net sales	[X]	[X]	[X]	[X]
Total sales	[X]	[X]	[X]	[X]
Goonvean EBITDA	[X]	[X]	[X]	[X]
Kaolin operating profit	[X]	[X]	[X]	[X]
Aggregates operating profit	[X]	[X]	[X]	[X]
Goonvean operating profit	[X]	[X]	[X]	[X]

Source: The parties.

Note: In contrast with the sales figures in Table 1, the above includes transportation/logistics costs. The operating profit in this table has been extracted directly from the statutory accounts and is thus not consistent with the management accounts figure in Table 1 that the AlixPartners report uses.

69. Table 6 shows that Goonvean was a profitable business at the EBITDA level pre-acquisition in every year from FY09 to FY12. The profitability of each division is not entirely clear (as the divisions were not managed independently and costs were not allocated between them) but in our view this is not important in considering the continued operation of Goonvean in its pre-acquisition form.
70. When assessing the performance of Goonvean it is important to consider the cash flow of the business as well as its profitability. Profits are, for example, reduced by non-cash items such as depreciation and provisions for future liabilities (site restorations etc). An indicative operating cash flow of the business is outlined in Table 7. Given the parties' claim that there had been a historic capital expenditure under-spend, we have added back capital expenditure in order to give a cash flow figure that we can compare with the capital requirements of the business (as per Table 3 above).

TABLE 7 Goonvean indicative operating cash flows, FY08 to FY12

	£'000				
	FY08	FY09	FY10	FY11	FY12
AlixPartners adjusted cash flow from Table 2	[X]	[X]	[X]	[X]	[X]
Cash flow from statutory accounts	[X]	[X]	[X]	[X]	[X]
Add back:					
Net capital expenditure	[X]	[X]	[X]	[X]	[X]
Purchase of subsidiary	[X]	[X]	[X]	[X]	[X]
Director compensation for loss of office	[X]	[X]	[X]	[X]	[X]
Adjusted operating cash flow	[X]	[X]	[X]	[X]	[X]
Year-end cash balance (see Table 3)	[X]	[X]	[X]	[X]	[X]
Dividend paid	[X]	[X]	[X]	[X]	[X]

Source: AlixPartners report and Goonvean statutory accounts.

Note: Cash flow figures not available in FY10, FY11 and FY12 as Goonvean did not include such a statement in its statutory accounts as it utilized statutory exemptions. The capital expenditure figures noted in this table are extracted from the statutory accounts as this is deemed to be the most reliable information source (this varies from the AlixPartners report). There are variances between the management account and statutory account numbers and no reconciliation has been performed between these. We deem the statutory accounts to be the most reliable source as these are externally audited and represent Goonvean in its actual pre-acquisition form. The statutory account cash-flow figures are only presented in FY08 and FY09 as cash flows were not prepared in FY10 to FY12.

71. Table 7 shows that despite incurring losses in FY09, the business generated positive pre-capital expenditure cash flows (£[x]) and had cash reserves of £[x] at the year end.⁴ Adding unusual expenditure (relating to purchase of subsidiaries in FY08 and payments related to this transaction in FY12) and also adding back the capital expenditure demonstrates that the business was generating positive operating cash flows (on average £[x] million over the last four years). We compared this cash flow with the capital expenditure requirements implied by depreciation in Table 3 (£[x] million over the last four years) and found that there was a small shortfall.
72. In addition to the cash-flow profile above, we note that in the years prior to acquisition there was in excess of £[x] cash reserves and no sign that the business faced cash constraints given that it paid an £[x] dividend pre-acquisition (and £[x] in FY11 to settle intercompany debts).⁵ These cash reserves would have stood Goonvean in good stead in the event that it were to experience any short-term losses in the future, require capital investment/maintenance (for example, on Greensplat) or need to fund a pension deficit (see paragraph 11(d)(viii)). [x]

The remaining G1 reserves in Goonvean pit and the impact on Goonvean's strategy

73. In the main report we consider the evidence on the amount of G1 reserves remaining. In this section, we set out supporting analysis on:
- (a) possible alternatives to G1; and
 - (b) Goonvean's strategy to move from tableware applications to life-science applications.

Possible alternatives to G1

74. We considered whether there were possible alternatives to G1 available to Goonvean. Based on the evidence in paragraph 28, we found that:
- (a) Steps to use [x] grade had already been taken in 2006 and there do not appear to have been further opportunities for exploitation.
 - (b) Additional processing could be employed to alter the characteristics of other Goonvean deposits in order for it to substitute G1 (principally [x] from Goonvean and Greensplat kaolin). Centrifuging and magnetic separation are two processing methods that could alter the characteristics of other Goonvean deposits sufficiently enough for them to substitute G1 (at least to some extent). However, as the required processing equipment is not currently owned by Goonvean, this would require capital expenditure of £[x] according to Goonvean and is unlikely to have been deployed in the short term having been considered in detail in June 2012.

Goonvean's strategy to move from tableware applications to life-science applications

75. In this section, we consider:
- (a) which tableware products Goonvean was seeking to move away from; and

⁴ Statutory accounts 2009.

⁵ Goonvean statutory accounts 2012.

(b) how quickly it would have done so.

Tableware products

76. Table 8 shows that [REDACTED].

TABLE 8 **Goonvean tableware analysis (G1 versus non-G1) and Imerys tableware sales for comparison, 2008 to 2012**

	tonnes					
	2008	2009	2010	2011	2012	Total
[REDACTED]						

Source: CC analysis.

77. [REDACTED]

78. [REDACTED]

Speed of change

79. [REDACTED]

80. [REDACTED]

81. Figure 1 shows that [REDACTED].

FIGURE 1

Goonvean sales by application FY08–12 with illustrative estimate for FY13–15

[REDACTED]

Source: CC analysis.

82. Figure 1 shows that on the basis of a continued trend in tableware and life-science sales, Goonvean's estimated revenue in FY15 [REDACTED].

83. We highlight in Table 9 [REDACTED].

TABLE 9 [REDACTED]

	£'000			
	FY12	FY13	FY14	FY15
		FC	FC	FC
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis.

84. [REDACTED]

85. [REDACTED]

Paper-filler applications

Introduction

1. This appendix sets out supporting evidence for kaolin supplied to paper-filler applications.
2. This appendix is structured as follows:
 - (a) shares of supply;
 - (b) kaolin sales and prices;
 - (c) overview of Sibelco;
 - (d) customer overview, including analysis of switching; and
 - (e) a summary of evidence on a customer-by-customer basis for the main UK customers.

Shares of supply

3. Table 1 below shows volumes and revenues of kaolin sold by Imerys and Goonvean to paper applications in the UK in 2012. It also shows sales of total UK-produced kaolin by the main parties (ie UK sales and export sales). Both Imerys and Goonvean produce and sell paper-filler kaolin grades in the UK. Sales of paper-filler kaolin represent relatively small shares of kaolin sales volumes in the UK: [%] per cent for Imerys and [%] per cent for Goonvean.¹ Imerys's main UK sales of kaolin are those of paper coating kaolin grades ([%] kt in 2012), representing around [%] per cent of hydrous kaolin sales in the UK by volume in 2012. Imerys does not produce paper coating kaolin grades in the UK but imports all the paper coating kaolin from its operations in Brazil.

¹ For Goonvean, the majority of paper-filler UK sales in 2012 were to Sibelco ([%]); if these are excluded, paper-filler sales represent around [%] per cent of Goonvean's total UK sales of kaolin. The main parties submitted that Sibelco exported Goonvean's paper-filler kaolin without further processing.

TABLE 1 Imerys and Goonvean kaolin sales to paper applications, 2012

Kaolin application	Imerys*				Goonvean†			
	Volume kt	Value £'000	Share of volume %	Share of value %	Volume kt	Value £'000	Share of volume %	Share of value %
Total UK sales‡	[x]	[x]			[x]	[x]		
Of which:								
Paper-filler	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Paper coating	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Total sales of UK production‡	[x]	[x]			[x]	[x]		
Of which:								
Paper-filler	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]

Source: CC analysis of Imerys and Goonvean data.

*For Imerys, total sales of UK produced kaolin include internal export sales (primarily sales of sanitaryware and tableware grades to Imerys body manufacturing plants outside the UK), but not its sales of UK kaolin to Sibelco and Goonvean, which amounted to [x] kt in 2012. Sales to Sibelco are not included in Imerys's UK sales figures; in 2012, Imerys sold [x] kt of paper-filler kaolin to Sibelco.

†For Goonvean, sales include paper-filler kaolin sold to Sibelco; Goonvean sold [x] kt (worth £[x]) to Sibelco in 2012.

‡Total UK sales and total sales of UK-produced kaolin (ie UK sales plus export sales) include sales of hydrous kaolin to all applications.

Note: Sales revenue is calculated by adding sales revenues of all customers and of all individual grades, which includes a mix of delivery terms (ie some will include transport, some not), product forms, and packaging types (ie some will be bulk, some will be packaged).

4. Imerys told us that it moved all its paper coating kaolin production from the UK to Brazil in 2008. The main parties submitted that no paper coating was produced in the UK, and thus that Goonvean did not produce or supply any paper coating kaolin in the UK. Goonvean told us that it did not produce any paper coating kaolin grades because it did not have the suitable processing equipment although it had the deposits. We focus on paper-filler applications for kaolin in the analysis presented in this appendix.
5. As Table 2 below shows, Imerys and Goonvean are the only current suppliers of kaolin to paper-filler applications in the UK. Imerys's market share was [90–100] per cent, and Goonvean's market share was [5–10] per cent in terms of sales volumes to the UK customers in 2012 ([90–100] and [5–10] per cent respectively if Imerys's and Goonvean's sales to Sibelco are included). Sibelco produces paper-filler kaolin in the UK, but does not sell any to customers in the UK; its share of production of paper-filler kaolin in the UK was [10–20] per cent in 2012 (compared with [60–70] per cent for Imerys and [10–20] per cent for Goonvean). Imerys sold to Sibelco [x] kt of paper-filler kaolin in 2012; this represented around [x] per cent of Sibelco's sales of UK-produced paper-filler kaolin.² Goonvean sold [x] kt of paper-filler kaolin to Sibelco in 2012.³ Imerys and Goonvean export most of the paper-filler kaolin produced in the UK: [90–100]. There are no imports of paper-filler kaolin into the UK.

² Imerys told us it understood that Sibelco sold this kaolin in paper-filler export markets with little or no additional processing. These sales to Sibelco are subject to a long-term supply agreement between the two producers.

³ The main parties submitted that they understood that paper-filler kaolin sold by Goonvean to Sibelco was exported by Sibelco without further processing.

TABLE 2 Paper-filler kaolin: UK shares of supply and shares of production, 2012

Supplier	UK sales		Sales of UK production		Exports	
	Volume kt	Share of volume %	Volume kt	Share of volume %	Volume kt	Share of UK production %
Imerys	[X]	[90–100]	[X]	[60–70]	[X]	[90–100]
Goonvean	[X]	[5–10]	[X]	[10–20]	[X]	[90–100]
Sibelco	[X]	-	[X]	[10–20]	[X]	[90–100]
Total	[X]		[X]		[X]	[90–100]

Source: CC analysis of Imerys, Goonvean and Sibelco data.

Note: Goonvean figures do not include sales to Sibelco, which amounted to around [X] kt in 2012. Imerys figures do not include paper-filler kaolin sales to Sibelco. Imerys sold [X] kt, worth around £[X] million to Sibelco in 2012.

Kaolin sales and prices

Trends in sales over time

6. Table 3 shows Imerys and Goonvean UK sales and UK production of kaolin sold to paper-filler applications in years 2008 to 2012. Imerys's UK production and UK sales of paper-filler kaolin have [X] in the last five years. Goonvean's sales of UK-produced paper-filler kaolin [X], and its UK sales have [X].

TABLE 3 Imerys and Goonvean kaolin sales of UK kaolin to paper-filler applications, 2008 to 2012

Supplier/sales	kt				
	2008	2009	2010	2011	2012
<i>Imerys</i>					
UK sales	[X]	[X]	[X]	[X]	[X]
Sales of UK production	[X]	[X]	[X]	[X]	[X]
<i>Goonvean</i>					
UK sales	[X]	[X]	[X]	[X]	[X]
Sales of UK production	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of Imerys and Goonvean data.

Note: Imerys's figures do not include its sales of paper-filler kaolin to Sibelco.

Sales of main paper-filler kaolin grades

7. Table 4 shows sales volumes and prices of the parties' main paper-filler kaolin grades sold in the UK. [X]

TABLE 4 Prices and sales volumes of Imerys's and Goonvean's paper-filler kaolin grades in the UK, 2008 to 2012

<i>Kaolin grade</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>
<i>Imerys</i>					
Sales volume (tonnes):					
Polwhite E	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Intrafill 60	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Average price (£):					
Polwhite E	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Intrafill 60	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Goonvean</i>					
Sales volume (tonnes):					
Platinum Jubilee*	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Platinum SC	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Platinum Fill*	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Average price (£):					
Platinum Jubilee*	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Platinum SC	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Platinum Fill*	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys and Goonvean data.

*Goonvean's sales of Platinum Jubilee and Platinum fill were to Sibelco.

Note: Average price is calculated by dividing total sales revenue of a given kaolin grade with total sales volume for that grade.

8. Imerys's main kaolin grades are Polwhite E and Intrafill 60. In paper-filler applications, Polwhite E is mainly sold to [REDACTED]. Intrafill 60 is mainly sold to [REDACTED], in slurry form (delivered). We observe that the volumes of Polwhite E and Intrafill 60 sold to paper-filler application have [REDACTED] between 2010 and 2012; we understand that [REDACTED] in 2008 and 2009 reflect the fact that [REDACTED]. Goonvean sells Platinum SC grade in the UK [REDACTED]; it also sold Platinum Jubilee and Platinum Fill grades to [REDACTED] in 2010 and 2012 respectively. Its price of Platinum SC [REDACTED] in the last five years. The table includes only the main grades sold by Imerys and Goonvean presently.

Changes in prices over time

9. Table 5 shows average changes in price for Imerys's three largest paper-filler customers from 2009 to 2012. There is variation across the customers and across years in price changes, [REDACTED].

TABLE 5 Average price changes for Imerys's largest paper-filler customers, 2009 to 2012

<i>Customer</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>
Arjowiggins	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
James Cropper	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Palm Paper	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys data.

Note: Averages calculated as weighted average price changes across observations (ie each observation is defined by customer, application, kaolin grade, packaging and form), weighted by sales volumes.

10. [REDACTED]

Overview of Sibelco

11. The main parties argued that Sibelco was a competitive constraint, and would continue to be such post-merger:

- (a) Sibelco already produces and exports significant amounts of paper-filler kaolin, and its grades are substitutable with parties' own grades.
 - (b) Sibelco has storage facilities in the Midlands, and could make use of [redacted] slurring facilities if it needed to supply UK paper-filler customers.
 - (c) Sibelco has sufficient quality and quantity of reserves at its pits at Hemerdon and Lee Moor in Devon to supply UK paper-filler customers (Imerys had used Lee Moor reserves before 2008 to supply UK paper-filler customers).
12. Sibelco told us that it would be able to supply Imerys and Goonvean customers as it had similar grades. Sibelco told us that its [redacted] could be a substitute for Imerys's [redacted], and [redacted] could be a substitute for Goonvean's [redacted] and [redacted]. Sibelco did not indicate a substitutable grade for Imerys's [redacted] though, [redacted], but Imerys indicated that Sibelco's [redacted] kaolin was a substitute for its [redacted].
 13. Sibelco said that whether it would supply Imerys and Goonvean UK paper-filler customers depended on it having spare capacity for that, either through switching exports or through increased capacity. We note that Imerys and Goonvean total paper-filler sales to UK customers were [redacted] kt in 2012 (excluding sales to Sibelco), which is [redacted] per cent of Sibelco's total paper-filler UK production in 2012 of [redacted] kt.
 14. Sibelco also said that whether it would be viable to supply Imerys and Goonvean UK paper-filler customers depended on the price it could get, and whether it would be more attractive than other options. We observe that Sibelco's average price for paper-filler kaolin sold abroad was £[redacted] per tonne. This compares to £[redacted] per tonne for Goonvean's paper-filler kaolin sold to [redacted] (on collect, ie ex-works, basis), and to £[redacted] per tonne for Imerys's [redacted].⁴
 15. [redacted] In 2012, Imerys sold to Sibelco [redacted] kt of paper-filler kaolin (with sales revenue of around £[redacted] million). [redacted]

Overview of the main party customers

Number and size of paper-filler customers

16. Table 6 provides an overview on the number and size of Imerys's and Goonvean's paper-filler customers. We observe that Imerys's and Goonvean's customer concentration is high as already the top 3 customers account for [redacted] per cent of the total revenue of sales to paper-filler application for Imerys and [redacted] per cent of revenue for Goonvean. Goonvean had [redacted] paper-filler customers in 2012: [redacted]. Imerys had [redacted] paper-filler customers, but [redacted] of those—[redacted]—purchased more than 100 tonnes in 2012.

⁴ This is estimate of ex-works prices for [redacted] delivered in lump form to [redacted] (2012).

TABLE 6 Imerys's and Goonvean's paper-filler customers: number and size distribution, 2012

Supplier	No of customers	No of customers with sales >100 tonnes	% revenue top 1 customer	% revenue top 3 customers	% revenue top 10 customers	Total sales £
Imerys	[X]	[X]	[X]	[X]	[X]	[X]
Goonvean	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of Imerys and Goonvean data.

Note: Customers are ranked by 2012 UK sales revenue.

Parties' main customers

17. Table 7 shows Imerys's and Goonvean's sales of paper-filler kaolin grades to UK customers in 2012. Paper filler is delivered to some customers in slurry form, and in bulk or bagged form to other customers; the delivered price can differ significantly by product form and customer:

- (a) The average price of Imerys's [X] grade delivered to [X] and [X] in slurry form was £[X] and £[X] per tonne respectively. Our estimates based on Imerys data indicate that the cost of slurring was £[X] per tonne, and the cost of delivery was £[X] per tonne to [X] and £[X] per tonne to [X].
- (b) Imerys's [X] was sold in bags to [X], at £[X] per tonne delivered (£[X] per tonne ex works). [X] was sold in bulk (lump) to [X], at £[X] per tonne delivered (£[X] per tonne ex works).
- (c) Goonvean sold [X] grade kaolin to [X] (a distributor), at an average ex-works price of £[X] per tonne. Around [X] per cent of its paper-filler kaolin sales to UK customers were to Sibelco, which, we understand, purchased this paper-filler kaolin to resolve a short-term supply issue and exported it to Nordic countries.

TABLE 7 Paper-filler kaolin: Imerys's and Goonvean's main UK customers and sales, 2012

Customer	Grade	Sales tonnes	Sales £	Av price (£/tonne)	Product form, delivery	Share of Imerys/ Goonvean PF volume %
<i>Imerys</i>						
[X]	[X]	[X]	[X]	[X]	[X]	
	[X]	[X]	[X]	[X]	[X]	
	[X]	[X]	[X]	[X]		[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]		[X]	[X]			[X]
Imerys total		[X]	[X]			[X]
<i>Goonvean</i>						
[X]	[X]	[X]	[X]	[X]	[X]	[X]
Sibelco	[X]	[X]	[X]	[X]	[X]	[X]
Goonvean total		[X]	[X]			[X]
Paper filler total		[X]	[X]			

Source: CC analysis of Imerys and Goonvean data.

18. Customers listed in Table 7 collectively accounted for 99 per cent (by volume) of Imerys's paper-filler kaolin sales in the UK, and for all of Goonvean's paper-filler kaolin sales in the UK.
19. [REDACTED] purchase paper-coating kaolin from Imerys. [REDACTED] purchased [REDACTED] tonnes and [REDACTED].

Customer switching

Cost of switching

20. In this section, we summarize the customers' and main parties' views on the cost of trialling and switching kaolin grades or suppliers in paper-filler applications. Customers told us the following:
 - (a) Arjowiggins told us that the trialling process involved laboratory testing, short machine trials and then long machine processes; the next step was to test the quality of the end-product with some customers. It said that the length of the trialling process depended on the mill and the complexity of the end-product and could take between 6 and 18 months. Arjowiggins noted that the cost of trialling a new product could be very high depending on the end-product lost, the hours of machine occupation and cleaning. It said that it was more of a question of risk than about the cost of trialling.
 - (b) James Cropper said that it would need a good reason to undertake trialling, such as back-up supply, development of a new product or for commercial reasons. The trialling process involved testing small samples in its Technical Department at the laboratory scale. It said that if the testing yielded results that were suitable and commercially viable, it proceeded to run a small-scale trial on the machine. It could not provide the exact cost of trialling.
 - (c) De La Rue noted that it had trialled alternative kaolin grades and alternative products in order to achieve different properties in the final product or to obtain a cost reduction. It said that trialling followed technical analysis of the kaolin properties and was undertaken to confirm whether the laboratory hypotheses were correct. It said that raw material trials consisted of full-scale manufacture of small-scale volumes of saleable paper. It would then test the paper produced and would release it if it was satisfied that the product represented no risk to the customer. De La Rue told us that the cost of trialling a new product was £10,000. To put this in context, Imerys's sales of paper-filler kaolin to De La Rue were around £5,000 in 2012.

Evidence on switching

21. Our analysis of the main parties' switching data showed that there has been no switching of suppliers in the UK market for paper-filler kaolin in the last five years.
22. The main parties said that there had been no customer switching between the parties in the last three years for customers of paper-filler kaolin. This was because Goonvean could not meet the demands of Imerys's customers (Arjowiggins, James Cropper and Palm Paper) as it did not have the requisite slurring/storage facilities.
23. Arjowiggins told us that it had not switched kaolin sourcing in the UK, and James Cropper told us that it had only sourced from Imerys although it had also trialled Goonvean's products and it had an approved Goonvean kaolin product.

Evidence on the main customers

24. Below we provide a customer-by-customer overview for the main party paper-filler customers.

Arjowiggins

Sourcing of kaolin

25. [REDACTED]⁵
26. Imerys and Arjowiggins [REDACTED]. Imerys told us that [REDACTED].⁶
27. Arjowiggins told us that [REDACTED].
28. Arjowiggins said that [REDACTED].
29. Arjowiggins told us that [REDACTED].

Alternatives and switching

Imerys/Goonvean

30. Arjowiggins told us that historically it had not supplied its UK mills from Goonvean even though Goonvean had already supplied some of its French mills. This was because Goonvean could not supply kaolin in slurry form. In addition, Arjowiggins told us that Goonvean could not supply the grade AW440 because it was a mix between kaolin and calcium carbonate which Goonvean could not offer.

Sibelco

31. Arjowiggins said that it had not considered Sibelco as kaolin supplier for paper filler. This was because Sibelco did not make calcium carbonates and consequently could not make the blends required by Arjowiggins.

Imported kaolin

32. Arjowiggins told us that it did not import kaolin for use in its UK mills.

Buyer power

33. Imerys submitted that sales of kaolin to [REDACTED].
34. Arjowiggins sources multiple minerals from Imerys. It told us that multisourcing was important in terms of sourcing strategy and that it had benefited from this both technically and economically. It also said that it saw advantages in sourcing kaolin from the same supplier across many countries as it currently did with Imerys.

⁵ [REDACTED]
⁶ [REDACTED]

James Cropper

Sourcing of kaolin

35. James Cropper sources all its kaolin from Imerys in the UK. It purchases mainly the paper-filler grade Polwhite E, and also purchases small volumes of paper coating kaolin produced in Brazil.
36. James Cropper told us that it received kaolin in a tipper truck in a 'noodle' form (dry but with a certain per cent of moisture). It said that kaolin was taken by train from Cornwall up to Stoke and then it collected kaolin with a tipper truck to bring it up by road to Burneside.
37. James Cropper said that it had a long-standing contract with Imerys for the supply of kaolin on consignment stock terms which was negotiated annually. It told us that it invited the suppliers to tender offers and negotiate where possible; the price negotiations depended on trading conditions and the offer.

Alternatives and switching

Imerys/Goonvean

38. James Cropper told us that it viewed Goonvean as the only alternative to Imerys. James Cropper had trialled and approved Goonvean's products; however, it had not purchased from Goonvean because it did not have a staging point that was local to James Cropper.
39. James Cropper said that the merger represented a worst-case scenario. This was primarily because it would take the only tested source of competition away from Imerys and therefore provide the merged entity with much stronger control over pricing.
40. [REDACTED] told us that for James Cropper, Imerys and Goonvean were close alternatives. When James Cropper's slurry facilities broke down and Imerys was not able to meet demand, James Cropper purchased more than 100 to 200 tonnes of Goonvean kaolin in powder form and [REDACTED]. In [REDACTED] view, the merger potentially left James Cropper vulnerable as it had not changed its supplier of kaolin.

Sibelco

41. James Cropper told us that it had never considered Sibelco as a supplier.

Imported kaolin

42. James Cropper said that kaolin from another part of the world would have entirely different characteristics. It told us that it liked the Cornish clay because of its uniqueness in terms of particle size, the way it was formed and brightness. James Cropper also said that the idea of importing kaolin was not particularly appealing because it did not have sufficient storage capacity and that it had no funds to invest in one. It told us that it would be very expensive to import kaolin without storage facilities.

Other minerals

43. James Cropper said that [REDACTED].

Buyer power

44. In relation to [REDACTED] buyer power, Imerys submitted that UK kaolin accounted for [REDACTED] per cent of [REDACTED] purchases from Imerys by value, and [REDACTED] to reduce the proposed price increases.
45. James Cropper said that some of its bargaining power with respect to Imerys came from being one of the biggest customers of kaolin in the UK (although not the biggest one). [REDACTED]
46. We reviewed some internal correspondence between Imerys and [REDACTED] regarding recent price negotiations. It appears that, [REDACTED]. However, the price increase for kaolin and other minerals [REDACTED]. It is not clear, though, whether the threat to switch purchases of other minerals away from Imerys [REDACTED] (eg [REDACTED] seems to suggest in the correspondence [REDACTED]).⁷

[REDACTED]

Sourcing of kaolin

47. [REDACTED] purchases Goonvean's paper-filler grade Platinum SC. It also purchases a paper-coating grade from abroad. The main parties told us that [REDACTED] slurried Goonvean's paper-filler kaolin and sold it to [REDACTED].

Alternatives and switching

Imerys/Goonvean

48. [REDACTED] told us that as a result of the merger, over the last four months, many of its customers had switched to purchasing kaolin directly from Imerys. Customers were switching from Goonvean's kaolin to Imerys's kaolin because they would eventually have to deal with Imerys for its kaolin purchases.
49. [REDACTED] told us that with Imerys and Goonvean as two separate companies, Goonvean was able to compete with Imerys. It said that there was little innovation in the industry, but with the sale of Goonvean's kaolin business, there was the potential for the loss of products provided by Goonvean.

Sibelco

50. [REDACTED] said that there was competition from Sibelco as alternative to kaolin produced by Imerys and Goonvean. It said that Sibelco could be a potential partner.

Imported kaolin

51. [REDACTED] told us that imports from Europe were a potential alternative to the kaolin grades produced by Imerys and Goonvean, and that it believed that its customers could replace Cornish kaolin with imported alternatives. It noted that the logistical costs of importing kaolin to the UK were too high for the imported kaolin to be competitive at the present time. It said that for imports to be able to compete with Cornish kaolin, the price would need double.

⁷ The main parties submitted that [REDACTED].

Other minerals

52. [X] told us that with the development of calcium carbonates as alternatives to kaolin, the use of kaolin in the paper industry had fallen by 50 per cent over the last 15 years. However, it noted that kaolin could not be completely replaced in paper-coating applications because of kaolin's fine particle size and its ability to provide a gloss coating; this could not be matched by other products that were available because these were more expensive.

Palm Paper

Sourcing of kaolin

53. Palm Paper buys kaolin from Imerys. It told us that price and supply agreements usually lasted one year and that it received kaolin in monthly deliveries in bulk.

Alternatives and switching

Imerys/Goonvean

54. Palm Paper told us that if Imerys increased its prices for kaolin it would try to find an alternative such as calcium carbonate. It said that it only bought from Imerys and it did not deal with Goonvean. It did not have any concerns regarding the merger.

Imported kaolin

55. Palm Paper told us that it considered Imerys and AKW as kaolin suppliers when it made its kaolin purchasing decisions, but that buying from non-UK producers was too expensive because of transport costs.

De La Rue

Sourcing of kaolin

56. De La Rue told us that it only purchased small quantities from Imerys; in the last 12 months this had been just over £[X] (just over [X] tonnes). It told us that it had dealings with Goonvean in 2009 but did not pursue it as a supplier.

Alternatives and switching

Imerys/Goonvean

57. In relation to the merger, De La Rue told us that it did not expect the merger to change its relationship with Imerys as it currently was its sole supplier of kaolin and De La Rue did not wish to change. It considered that the effects of the merger would be neutral because only one of the three products it purchased was supplied by both parties (Polwhite B China Clay); the other two (Intrafill and Alphatex) were unique to Imerys.

Sanitaryware applications

Introduction

1. This appendix sets out supporting evidence for kaolin supplied to sanitaryware applications.
2. This appendix is structured as follows:
 - (a) shares of supply;
 - (b) kaolin sales and prices;
 - (c) overview of Sibelco;
 - (d) customer overview, including analysis of switching; and
 - (e) a summary of evidence on customer-by-customer basis for the main UK customers.

Shares of supply

3. As Table 1 below shows, Imerys, Goonvean and Sibelco currently supply kaolin to sanitaryware applications in the UK. The market shares in terms of sales volumes were as follows in 2012: Imerys [30–40] per cent, Goonvean [10–20] per cent and Sibelco [40–50] per cent. There are no imports of sanitaryware kaolin into the UK. We note that there has been a significant decline in the sales of sanitaryware grade kaolin in the UK in the last four years (from [£] kt in 2009 to [£] kt in 2012—see Table 3 below), and that there have been shifts in market shares in the last five years as kaolin producers have lost sanitaryware customers through closure of business or switching, although overall they have not changed significantly [£].

TABLE 1 Kaolin for sanitaryware applications: UK shares of supply, 2012

Supplier	UK sales		Total sales of UK production		Export sales	
	Volume kt	Share of volume %	Volume kt	Share of volume %	Volume kt	Share of UK production %
Imerys	[£]	[30–40]	[£]	[50–60]	[£]	[90–100]
Goonvean	[£]	[10–20]	[£]	[10–20]	[£]	[90–100]
Sibelco	[£]	[40–50]	[£]	[20–30]	[£]	[90–100]
Total	[£]		[£]		[£]	[90–100]

Source: CC analysis of Imerys, Goonvean and Sibelco data.

Note: Imerys's figures do not include sales of a ceramic kaolin grade, [£], to Sibelco; Imerys sold [£] kt of [£] to Sibelco in 2012. These figures do not include sales of ceramic grade kaolin tiles; Imerys produced [£] kt of kaolin supplied to tiles manufacture in 2012, but all of this was exported and sold to non-UK customers. Goonvean told us it had not produced or sold any kaolin for tiles since 2009. For Imerys, total sales of UK produced kaolin include internal export sales (primarily sales of sanitaryware grades to Imerys body manufacturing plants outside the UK).

4. Table 2 shows volumes and revenues of kaolin sold by Imerys and Goonvean to sanitaryware applications in the UK in 2012. It also shows total sales of UK-produced sanitaryware kaolin by the main parties. For Imerys, sanitaryware kaolin represented [£] per cent of its total sales of UK produced kaolin by volume, and [£] per cent of

UK sales of kaolin. For Goonvean, sanitaryware kaolin represented [x] per cent of its total sales of UK produced kaolin, and [x] per cent of Goonvean's sales of kaolin in the UK.

TABLE 2 **Imerys and Goonvean sales of UK produced sanitaryware kaolin in the UK and total, 2012**

Kaolin application	Imerys*				Goonvean			
	Volume kt	Value £'000	Share of volume %	Share of value %	Volume kt	Value £'000	Share of volume %	Share of value %
Total UK sales†	[x]	[x]			[x]	[x]		
Of which:								
Sanitaryware	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
Total sales of UK production†	[x]	[x]		[x]	[x]	[x]		
Of which:								
Sanitaryware	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]

Source: CC analysis of Imerys's and Goonvean's data.

*For Imerys, total sales of UK produced kaolin include internal export sales (primarily sales of sanitaryware and tableware grades to Imerys body manufacturing plants outside the UK), but not its sales of UK kaolin to Sibelco and Goonvean, which amounted to [x] kt in 2012. Sales to Sibelco are not included in Imerys's UK sales figures; in 2012, Imerys sold [x] kt of ceramic grade kaolin [x] to Sibelco.

†Total UK sales and total sales of UK-produced kaolin (ie UK sales plus export sales) include sales of hydrous kaolin to all applications.

Note: Sales revenue is calculated by adding sales revenues of all customers and of all individual grades, which includes a mix of delivery terms (ie some will include transport, some not), product forms, and packaging types (ie some will be bulk, some will be packaged).

- Sibelco sold [x] kt of UK-produced sanitaryware kaolin in 2012, which represented [x] per cent of its total sales of UK production. In terms of sales in the UK, its sales to sanitaryware applications represented [x] per cent of its total sales of kaolin in the UK ([x] per cent if sales to Imerys are excluded).

Sanitaryware kaolin sales and prices

Trends in sales over time

- Table 3 shows Imerys, Goonvean and Sibelco sales of sanitaryware kaolin to UK customers between 2008 and 2012. There has been a significant [x] in volumes of kaolin sold in the UK to sanitaryware applications [x].

TABLE 3 **Sales of kaolin to UK sanitaryware application by UK producers, 2008 to 2012**

Supplier	kt				
	2008	2009	2010	2011	2012
Imerys	[x]	[x]	[x]	[x]	[x]
Goonvean	[x]	[x]	[x]	[x]	[x]
Sibelco	[x]	[x]	[x]	[x]	[x]
Total	[x]	[x]	[x]	[x]	[x]

Source: CC analysis of Imerys, Goonvean and Sibelco data.

Prices of main sanitaryware kaolin grades

- Table 4 below shows volumes and prices for Imerys's main sanitaryware kaolin grades sold in the UK presently. Before 2012, Imerys used to sell its Supercast and

Treviscoe grades to sanitaryware customers in the UK. [REDACTED] Sales volumes of its NSC grade [REDACTED].

8. Table 4 also shows volumes and prices for Goonvean’s main sanitaryware kaolin grades sold in the UK presently: Diamond Blend 270 and Diamond Swift. Goonvean sells [REDACTED] kaolin grades from its ‘Diamond’ range to sanitaryware applications. We observe that Goonvean’s sales of Blend 270 have [REDACTED] and the average [REDACTED], although [REDACTED]. The sales of the Diamond Swift have [REDACTED] since 2010, [REDACTED], and the price [REDACTED].

TABLE 4 Prices and sales volumes of Imerys and Goonvean sanitaryware kaolin grades in the UK, 2008 to 2012

Supplier and grade	2008	2009	2010	2011	2012
Imerys: NSC					
Sales volume (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Average price (£/tonne)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Goonvean: Diamond Swift					
Sales volume (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Average price (£/tonne)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Goonvean: Diamond Blend 270					
Sales volume (tonnes)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Average price (£/tonne)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys and Goonvean data.

Note: Average price is calculated by dividing total sales revenue of a given kaolin grade with total sales volume for that grade.

9. We examine sales and prices of sanitaryware kaolin, including those supplied by Sibelco, in more detail when we consider sales to the main UK customers in paragraphs 15 to 18 below.

Overview of Sibelco

10. The main parties argued that Sibelco was a strong competitive constraint, and would continue to be such post-merger:
- (a) The main parties submitted that Sibelco’s [REDACTED] was a kaolin grade competing with Goonvean’s Diamond Swift and Imerys’s NSC, and that Sibelco’s [REDACTED] was competing with Goonvean’s Diamond Collaggio and Diamond Blend range of kaolin grades.
 - (b) The main parties submitted that [REDACTED] had switched its purchases to Sibelco and had recently [REDACTED] to undercut Imerys and Goonvean prices in negotiations. As an example, the main parties submitted that during recent negotiations with Goonvean [REDACTED] had [REDACTED], and as a result Goonvean [REDACTED].
11. Sibelco told us that it competed with Imerys and Goonvean in sanitaryware and in the more limited earthenware and stoneware market. Sibelco explained that prior to their merger, it actively competed with both Imerys and Goonvean for customers, and that it would initiate contact with potential customers and try to win customers from its rivals.
12. Sibelco submitted that its [REDACTED] grade was a substitute for Imerys’s [REDACTED] and [REDACTED], and Goonvean’s [REDACTED], and that its [REDACTED] grade was a substitute for Imerys’s [REDACTED]¹ and

¹ Imerys supplied [REDACTED] to Ideal Standard prior to [REDACTED].

Goonvean's [REDACTED]. However, Sibelco noted that it currently did not produce a substitute for Imerys's [REDACTED] (which is purchased by [REDACTED]), and [REDACTED].

13. Sanitaryware customers told us the following regarding Sibelco:
 - (a) Ideal Standard viewed Sibelco as a viable supplier of kaolin grades. [REDACTED]
 - (b) Impulse Bathrooms told us that Sibelco could offer a limited partial solution (ie it could use up to 10 per cent of kaolin from south Devon). It was of the view that Devon grades had different casting performance than the Cornish grades for similar costs.
14. In relation to its negotiations with customers, Sibelco told us that, in its experience, customers who bought more than one material from it had not, for example, attempted to get a better price on kaolin by threatening to move their ball clay supplies from Sibelco. However, Sibelco noted that its customers could source kaolin from other producers and used this fact in their negotiations with Sibelco.

Overview of the main parties' customers

Imerys's and Goonvean's main sanitaryware customers

15. Imerys had [REDACTED] sanitaryware customers in the UK in 2012; [REDACTED] customers purchased more than 100 tonnes of kaolin in 2012. Goonvean had [REDACTED] sanitaryware customers in the UK in 2012; [REDACTED] customers purchased more than 100 tonnes of kaolin in 2012.
16. Table 5 shows Imerys's and Goonvean's largest three customers for sanitaryware kaolin. Ideal Standard is the largest customer for both, accounting for [REDACTED] and [REDACTED] per cent of their total sales of sanitaryware kaolin in the UK respectively. [REDACTED] (also referred to as [REDACTED]) is the second largest customer, accounting for [REDACTED] per cent of Imerys's and [REDACTED] per cent of Goonvean's sanitaryware kaolin grade sales in 2012.

TABLE 5 Sanitaryware kaolin: Imerys and Goonvean top 3 customers in the UK for sanitaryware kaolin, 2012

Customer name	Sales tonnes	Sales £	Average price £/tonne	Sales revenue within sanitary-ware kaolin %
<i>Imerys</i>				
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Goonvean</i>				
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys and Goonvean data.

Note: Customers are ranked by 2012 UK sales revenue. [REDACTED]

17. The largest UK customer for sanitaryware-grade kaolin is Ideal Standard, accounting for [REDACTED] per cent of total sanitaryware-grade kaolin purchases in the UK in 2012. Table 6 summarizes data on Ideal Standard's kaolin purchases in the UK in 2012. It shows that Ideal Standard purchases [REDACTED] from Goonvean and [REDACTED] from Sibelco, [REDACTED] grade it purchases from Imerys. [REDACTED] was Ideal Standard's main supplier in 2012, accounting for [REDACTED] per cent of the purchased volumes of kaolin.

TABLE 6 **Ideal Standard: purchases of kaolin in the UK, 2012**

<i>Supplier and grade</i>	<i>Volume tonnes</i>	<i>Value £</i>	<i>Average price £/tonne</i>	<i>Share of volume %</i>
Imerys—[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Goonvean—[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Sibelco—[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]		

Source: CC analysis of Imerys, Goonvean and Ideal Standard data.

Note: Delivered values and prices.

18. [redacted] [a sanitaryware customer]; it purchases from both Imerys and Goonvean. In 2012, it purchased [redacted] tonnes of Imerys’s [redacted] kaolin grade at delivered price of £[redacted] per tonne, [redacted] tonnes of Goonvean’s [redacted] kaolin grade at delivered price of £[redacted] per tonne.

Customer switching

Cost of switching

19. In this section, we summarize the customers’ and main parties’ views on the cost of trialling and switching kaolin grades or suppliers in sanitaryware applications. This includes the direct monetary cost, time and other indirect ‘costs’ or risks associated with trialling and switching.
20. Sibelco told us that the ease of switching kaolin suppliers depended on how similar the substituted material was to the one currently used by the customer: the more similar the material, the easier it would be to switch. It told us that the speed of production of sanitaryware was more sensitive to the kaolin used if compared with tableware. Sibelco said that, because the quality of minerals varied, manufacturers would have to run production trials to ensure that they were able consistently to make products that would match their customers’ specifications. Sibelco told us that customers were increasingly looking to switch their kaolin provider in response to small increases in price, and that the extent to which the cost of kaolin affected the cost of a given product would depend on the amount of kaolin used in its manufacture and the purchase price of the kaolin.
21. Ideal Standard told us, in relation to switching kaolin grades and/or suppliers, that:
- It regularly trialled products. Past trials were based on improving the production performance and reducing the recipe cost per tonne. For Ideal Standard, the trialling process first involved laboratory trials, followed by small production trials which then scaled up to large industrial trials; this process was estimated to take six to nine months. In relation to the switching costs, Ideal Standard noted that it did not know the true cost of switching because costs varied by project.
 - It took a long time to reformulate recipes. In the case of switching to Goonvean’s Diamond Swift, Ideal Standard told us that switching took around nine to twelve months in order to get the correct production results. After introducing Diamond Swift at a certain percentage level, it still had to keep revising the recipe because it had not given the right results.
 - Imerys’s Supercast was a very fast-casting kaolin, and it was a difficult kaolin grade to produce and therefore was sold at a premium. Ideal Standard explained that it was able to replace this kaolin grade with a combination of other kaolin

grades from other suppliers while still achieving the same result in the final slip, but that this was not a one-for-one replacement as it had to change other parameters in the slip in order to make the switch.

22. Impulse Bathrooms told us that in addition to the price differential, the cost of switching kaolin grades arose because of the long testing and development time for re-formulation; the trials and implementation could take over three months, with large costs being incurred if the performance of kaolin in the production was not the same as before.
23. In relation to switching kaolin grades and/or suppliers for sanitaryware applications the main parties told us that:
 - (a) There was nothing unique about Cornish kaolin for sanitaryware applications and customers could easily reformulate and hence switch between suppliers.
 - (b) Sanitaryware manufacturers would use a blend of different grades of kaolin, ball clays and other minerals in their production processes. Although no two kaolin grades had identical properties, it would always be possible for a manufacturer to reduce or remove one kaolin grade from its production process by substituting a blend of other kaolin grades.
 - (c) Some reformulation would be required whether switching between the main parties' grades or between the main parties and another kaolin supplier. Customers employed ceramists to formulate optimum blends while third party laboratories such as Ceram Research provided similar services on a consultancy basis.

Evidence on switching

24. Our review of the parties' switching data showed that there has been switching in sanitaryware in the last five years. [X] In 2009, Imerys's sales to [X] were around [X] kt, which represented around [X] per cent of its total UK sales of kaolin. Neither Imerys nor Goonvean [X], since, as shown in Table 6 above, [X] continues to purchase [X] from both Imerys and Goonvean.

Evidence on the main customers

25. Below we provide a customer-by-customer overview for the main parties' customers of sanitaryware kaolin in the UK.

Ideal Standard

Sourcing of kaolin

26. Ideal Standard in the UK purchases the grade NSC from Imerys, the grades Diamond Colaggio and Diamond Swift from Goonvean and the grade HPC from Sibelco. Ideal Standard gets most of its volumes from Imerys and Sibelco. Ideal Standard told us that it sourced kaolin in bulk form (most of the kaolin required in the UK was bulk with only 1 per cent purchased in big bags), and that it had on average 3.5 deliveries per week.
27. Ideal Standard told us that it received the raw kaolin material and then blended it with ball clay and non-plastic materials in order to produce casting slip. Ideal Standard explained that, in its UK site, it made three different vitreous china slips which utilized

different kaolin grades in slightly different proportions in order to optimize each processing line.

28. Ideal Standard told us that it usually negotiated prices on an annual basis. Sometimes prices were held for longer than 12 months but this was agreed through negotiation. It told us that negotiations with Imerys and Sibelco were European (ie they covered UK and all other Ideal Standard sites in Europe) and that negotiations with Goonvean were UK only. [REDACTED]
29. [REDACTED]
30. Ideal Standard told us that each of its recipes worldwide used, in some part, kaolin from the UK; it combined kaolin produced in the UK with locally-sourced kaolin and ball clay. It explained that, although kaolin sourced from Cornwall could technically be substituted with kaolin sourced elsewhere, Ideal Standard preferred it due to its consistency of quality; [REDACTED]. It said that it considered all kaolin supplied by Imerys, Goonvean and Sibelco to be consistent in terms of technical properties and quality.

Alternatives and switching

Imerys/Goonvean

31. The main parties told us that Imerys and Goonvean were not competing on price for Ideal Standard because Imerys's [REDACTED] and Goonvean's [REDACTED] grades had differing properties and different prices, with Imerys's grade being [REDACTED] per cent more expensive, indicating that the grades were not directly substitutable. The main parties argued that, even though [REDACTED] purchased from both Imerys and Goonvean, the reason was to satisfy different purposes. However, we note that the main parties also suggested in their submissions that the fact that kaolin grades were not directly interchangeable or that their prices differed did not mean that the suppliers of these grades did not compete, which contradicts their statement above regarding sanitaryware grades.
32. The main parties told us that sanitaryware manufacturers used a blend of different grades of kaolin, ball clays and other minerals in their production processes. As no two kaolin grades had identical properties, they could not be substituted on a one-to-one basis, but it was possible for a manufacturer to reduce or remove one kaolin grade from its production process by substituting a blend of other grades. In relation to this point, the main parties said that Imerys and Goonvean kaolins were not often the closest substitutes for one another and were never the only substitutes despite the geographic proximity of their extraction sites. They said that some reformulation was required whether switching between Imerys and Goonvean grades or between Imerys/Goonvean and another supplier.
33. With regard to UK kaolin suppliers, Ideal Standard told us that it had not been satisfied with the price of Supercast grade that it was buying from Imerys [REDACTED], therefore it looked for alternative suppliers and eventually agreed with Goonvean to consider its Diamond Swift kaolin grade as a replacement for Supercast. It said that, after the trialling process, it had ended up with a recipe that included Diamond Swift, an increased quantity of Imerys's NSC, and HPC kaolin grade from Sibelco. [REDACTED]
34. Ideal Standard told us that Imerys and Goonvean were close competitors for its UK plant. [REDACTED] It noted that Goonvean's lower prices did not reflect a lower quality, consistency or performance of product, and that it understood Goonvean had lower costs than Imerys because Goonvean was a UK-only business.

35. Ideal Standard said that, in the event that Goonvean's kaolin became unavailable or more expensive, it would put projects in place to see where it could move the business or what other kaolin grades would be available, though it would take time to reformulate recipes accordingly.

Sibelco

36. Ideal Standard told us that if Goonvean's kaolin grades were no longer available or became prohibitively expensive, it would have to see where it could move the business to or what other clays were available. [REDACTED]
37. The main parties told us that Ideal Standard used automated pressure casting techniques in its manufacturing process—this meant that there was no manual handling of the unfired pieces, thereby reducing the risk of damage through manual handling, and thus strength/plasticity of grades was of less importance to the final yield rate. The parties noted that Ideal Standard was able to use grades with higher casting rates to take advantage of the faster casting times, although these grades had lower strength/plasticity. This was reflected in the use of NSC, Diamond Swift and HPC as opposed to the stronger Goonvean Diamond Blend grades used by other UK customers. The main parties submitted that, as Sibelco was the largest kaolin supplier to Ideal Standard in the UK, this demonstrated that its grades were perfectly adequate.
38. In relation to the adequacy of Sibelco's grades, the main parties said that Sibelco's HPC grade was developed specifically for Ideal Standard's Rugeley facility (the main parties said that they understood this grade was originally known as FCP) and that its CC31 grade (which had similar properties to HPC) was a closer substitute for Imerys's NSC than Goonvean's Diamond Swift grade, which was used by Ideal Standard in its blends to make use of the higher casting rate. Additionally, the main parties understood that Sibelco had previously supplied kaolin grade(s) substitutable for Diamond Swift to Ideal Standard, as well as to other sanitaryware manufacturers in the UK including Armitage Shanks and Allia, and could readily recommence the supply.

Imported kaolin

39. The main parties argued that Cornish kaolin sold for sanitaryware applications had no unique qualities and could be replaced by kaolin sourced elsewhere. They noted that Ideal Standard purchased kaolin from Sibelco (UK, Devon), kaolin AD (Bulgaria), Horni Briza (Czech Republic), AKW (Germany) and SOKA (France) for its Continental European facilities and was actively testing overseas kaolin for its UK facility. The main parties said that a large customer such as Ideal Standard was well positioned to import kaolin. Ideal Standard already received kaolin by vessel for its plants in Egypt or Bulgaria and its UK purchases of sanitaryware kaolin of around [REDACTED] tonnes a year would be more than sufficient to justify transport by vessel.
40. With regard to non-UK kaolin producers, Ideal Standard told us that it was not able to import kaolin because it did not have any bulk storage facilities necessary for importing in the UK, and thus required just-in-time deliveries from UK suppliers.
41. Ideal Standard explained that it would need to consider the following if it was to source kaolin from non-UK suppliers: investments in facilities to take large bulk deliveries; decrease in its cash flow because it would be holding a lot more stock; the additional ocean freight; and other transport costs associated with sourcing kaolin from outside the UK. Ideal Standard said that it had not considered so far making this

investment because it had always been able to satisfy its requirements using the UK suppliers. [REDACTED]

42. [REDACTED]

Buyer power

43. The main parties submitted that [REDACTED], taking advantage of its buyer power. [REDACTED] As an example, the main parties submitted that [REDACTED].

44. Imerys submitted that its main sanitaryware customer—[REDACTED]—had buyer power because it purchased multiple minerals from Imerys and in multiple countries. Imerys told us that [REDACTED] UK purchases of UK-produced kaolin accounted for [REDACTED] per cent of Imerys's total sales to [REDACTED]. [REDACTED] total purchases of UK-produced kaolin (ie in the UK, in Europe and in Egypt) accounted for [REDACTED] per cent of Imerys's total sales to [REDACTED] in 2012.

45. [REDACTED]

46. Ideal Standard told us that it believed it currently had bargaining power with the three UK suppliers even though Goonvean only supplied the UK plant. It believed that suppliers had an incentive to offer it a competitive price not only because it was the only major producer of sanitaryware in the UK but also because there was potential to supply its other plants worldwide.

47. Ideal Standard also said that its bargaining power would change for the UK plant as a result of the merger because it had Goonvean as an option for kaolin in the UK. It said that it had a lot more bargaining power with the three suppliers [REDACTED]. Ideal Standard said that it was concerned that the merger could see large price increases from Imerys and that existing products from the Goonvean portfolio could be discontinued.

48. Internal correspondence between Imerys and [REDACTED] suggested that Ideal Standard was a cost-conscious customer that was actively trialling products, looking for less costly kaolin inputs, and negotiated down prices by threatening to switch volumes.

Impulse Bathrooms

Sourcing of kaolin

49. Impulse Bathrooms purchases kaolin from Goonvean and Imerys. Kaolin from Goonvean represents approximately 20 per cent of the final product and kaolin from Imerys represents approximately 10 per cent of the final product. Impulse Bathrooms purchases Imerys's [REDACTED] and Goonvean's [REDACTED].

Alternatives and switching

Imerys/Goonvean

50. Impulse Bathrooms told us that Cornish kaolin was unique for its needs, therefore the only suitable producers were Goonvean and Imerys.

51. Impulse Bathrooms said that Sibelco offered only a limited partial solution due to the differing strength and mineralogical properties of Devon deposits if compared with Cornish deposits; it explained that kaolin from south Devon could be used in part—

below 10 per cent—to substitute for kaolin from Cornwall. It said that kaolin grades from Devon had a different casting performance than kaolin from Cornwall for similar delivered prices (ie they were less strong and could potentially cause cracks, thus increasing wastage).

Imported kaolin

52. Impulse Bathrooms told us that kaolin grades were available from France and the Czech Republic, but that the cost of importing would seriously increase its raw material prices and thus prices of its end-products, which would be detrimental to its market positioning if compared with the imported sanitaryware from Eastern Europe, Turkey and China.
53. It said that imported kaolin grades had worse casting performance and properties than Cornish grades, and that the delivered price was considerably higher (around 25 per cent).

Buyer power

54. Impulse Bathrooms suggested that, [REDACTED].

Shaws of Darwen

55. Shaws of Darwen is a specialist heavy fire clay manufacturer of premium sinks, and it purchases [REDACTED]; we note that it has also purchased [REDACTED].
56. In relation to the merger, Shaws of Darwen told us that the merger [REDACTED]. It said that the economies of scale offered by such a merger should enable the combined organization to be more competitive in the general marketplace.

Tableware applications

Introduction

1. This appendix sets out supporting evidence for kaolin supplied to tableware applications.
2. This appendix is structured as follows:
 - (a) shares of supply;
 - (b) kaolin sales and prices;
 - (c) overview of Sibelco;
 - (d) customer overview, including analysis of switching; and
 - (e) a summary of evidence on customer-by-customer basis for the main UK customers.

Shares of supply

3. As Table 1 below shows, Imerys, Goonvean and AKW currently supply kaolin to tableware applications in the UK. The market shares in terms of sales volumes were as follows in 2012: Imerys [60–70] per cent, Goonvean [20–30] per cent and AKW [5–10] per cent. AKW's is imported kaolin [X]. In addition to the 'independent' imports shown below, Goonvean also imports AKW's kaolin and blends with its own; this amounted to around [X] kt in 2012 (this represented [X] per cent of its total UK kaolin production in 2012).¹

¹ Assuming that Goonvean exports [X] per cent of the AKW's kaolin as part of its tableware kaolin products and thus [X] per cent of the [X] tonnes imported by Goonvean remain in the UK [X], this gives AKW's kaolin an estimated share of supply in the UK to tableware applications of [5–10] per cent.

TABLE 1 **Kaolin for tableware applications: UK shares of supply and shares of production, 2012**

Supplier	UK sales		Total sales of UK production		Exports	
	Volume kt	Share of volume %	Volume kt	Share of volume %	Volume kt	Share of UK production %
Imerys	[x]	[60-70]	[x]	[80-90]	[x]	[90-100]
Goonvean	[x]	[20-30]	[x]	[10-20]	[x]	[60-70]
AKW	[x]	[5-10]				
Total	[x]		[x]		[x]	[80-90]

Source: CC analysis of Imerys, Goonvean and AKW data.

Notes:

1. AKW figures relate to imports by customers [x]. Imerys's UK sales figures include imports of tableware kaolin grades from New Zealand (around [x] tonnes in 2012).
2. Imerys figures do not include kaolin sold to ceramic engineering applications; in 2012, Imerys sold [x] kt of UK-produced kaolin to ceramic engineering applications, only [x] tonnes of which were sold in the UK.
3. Imerys figures of total sales of UK production include internal sales of tableware grades to Imerys body manufacturing plants outside the UK.
4. Goonvean figures do not include kaolin sold to glazes and englobes applications; in 2012, Goonvean sold [x] kt of kaolin to glazes and englobes applications (representing [x] per cent of its total UK production of kaolin), but only [x] tonnes were sold in the UK to its tableware customers and distributors, with the majority of kaolin for this application sold in export markets. Including kaolin supplied to glazes applications, Goonvean's share of sales of UK production was [20-30] per cent and its share of UK sales was [30-40] per cent.

Kaolin sales and prices

Trends in sales over time

4. Table 2 shows Imerys UK sales and production of kaolin sold to tableware application. Table 3 does the same for Goonvean. We observe that Imerys's UK production (as proxied by total sales of UK production) of tableware kaolin has [x] between 2008 and 2012 by [x] per cent, and also its sales of kaolin to tableware applications in the UK have [x] in this period by [x] per cent, which is [x] its kaolin sales in the UK ([x] per cent). Goonvean's UK production of tableware kaolin has [x] between 2008 and 2012 by [x] per cent, and its UK sales to tableware have [x] by [x] per cent over the same period, [x].²

TABLE 2 **Imerys's UK kaolin sales and production: tableware application, 2008 to 2012**

Kaolin application	kt				
	2008	2009	2010	2011	2012
<i>UK sales</i>					
Total sales volume	[x]	[x]	[x]	[x]	[x]
Of which:					
Tableware	[x]	[x]	[x]	[x]	[x]
<i>Total sales of UK production</i>					
Total sales volume	[x]	[x]	[x]	[x]	[x]
Of which:					
Tableware	[x]	[x]	[x]	[x]	[x]

Source: CC analysis of Imerys's data.

Note: Imerys's figures include imports of tableware kaolin from New Zealand. Total UK sales and total sales of UK-produced kaolin include sales of hydrous kaolin to all applications. For Imerys, total sales of UK-produced kaolin include internal export sales (primarily sales of sanitaryware and tableware grades to Imerys body manufacturing plants outside the UK), but not its sales of UK kaolin to Sibelco and Goonvean, which amounted to [x] kt in 2012.

² Goonvean's overall sales in the UK have [x] in the period [x], most of which can be attributed to [x]. As regards Goonvean's [x] in tableware sales in the UK, [x].

TABLE 3 **Goonvean's UK kaolin sales and production: tableware application, 2008 to 2012**

Kaolin application	kt				
	2008	2009	2010	2011	2012
<i>UK sales</i>					
Total sales volume	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which:					
Tableware	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Total sales of UK production</i>					
Total sales volume	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Of which:					
Tableware	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Goonvean's data.

Note: Goonvean's tableware figures include [REDACTED]. Total UK sales and total sales of UK-produced kaolin include sales of hydrous kaolin to all applications.

Analysis of prices

5. Table 4 below shows the average prices for Imerys's and Goonvean's main tableware kaolin grades supplied to the UK tableware customers from 2008 to 2012. Imerys's main tableware grades supplied in the UK are: Standard Porcelain (SP), Super Standard Porcelain (SSP), Regal, Grolleg and Remblend (these collectively accounted for [REDACTED] per cent of total sales volumes to tableware applications in the UK in 2012). Goonvean's main tableware grades supplied in the UK are: Diamond Tableware (DTW), Diamond Star, Diamond Porcelain (DP), Diamond DTC, Diamond DP Plus (they accounted for [REDACTED] per cent of total sales volumes to tableware application in the UK in 2012).

6. We observe that prices [REDACTED] between 2008 and 2012 for all grades [REDACTED]

TABLE 4 **Average prices of the parties' main kaolin grades supplied to tableware application in the UK, 2008 to 2012**

Kaolin grade	Average price, £				
	2008	2009	2010	2011	2012
<i>Imerys</i>					
Standard Porcelain	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Super Standard Porcelain	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Regal	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Grolleg	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Remblend	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Goonvean</i>					
DTW	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Diamond Star	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
DP*	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Diamond DTC	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Diamond DP Plus	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys's and Goonvean's data.

* DP = Diamond Porcelain. [REDACTED]

Note: Average price is calculated by dividing total sales revenue of a given kaolin grade with total sales volume for that grade. Sales revenue is calculated by adding sales revenues of all customers and of all individual grades, which includes a mix of delivery terms (ie some will include transport, some not), product forms, and packaging types (ie some will be bulk, some will be packaged).

7. Customers told us that the following Imerys and Goonvean grades were similar: SSP and Diamond Star, SP and Diamond DP Plus, Grolleg and Regal and DTW. When we compare average prices of these similar grades in the period from 2008 to 2012, we observe the following:

- (a) SSP has been [redacted] Diamond Star;
 - (b) SP has been [redacted] Diamond DP Plus; and
 - (c) Regal has been [redacted] DTW and Grolleg has been [redacted] DTW.
8. We note, however, that average prices include a mix of individually negotiated prices and volumes, delivery terms, form and packaging types, etc, therefore it is difficult to compare prices on a like-for-like basis. Furthermore differences in prices may also reflect differences in qualities of the various grades.
9. We examined estimated ex-works prices of tableware kaolin grades supplied to main tableware customers in the UK, including ex-works prices of AKW's tableware grades currently imported in the UK. We analysed [redacted] AKW kaolin grades imported into the UK: [redacted]. Table 5 shows estimated average ex-works prices for 2012 for the main customers and the main tableware grades supplied in the UK.

TABLE 5 Average ex-works prices of kaolin sold to the main tableware customers in the UK, 2012

Supplier	Grade	Customer	Ex-works price £/tonne
AKW	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
Goonvean	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]
Imerys	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]

Source: CC analysis of Imerys, Goonvean and AKW data.

Note: Ex-works prices of Imerys and Goonvean are estimated by subtracting the value of freight from the delivered revenue in their sales data. We used a €/£ exchange rate of 1.234 (average Bank of England spot rate in 2012) to convert AKW's prices from euros to British pounds.

10. We observe the following in relation to AKW's, Imerys's and Goonvean's tableware kaolin grades:
- (a) Imerys's [redacted] and Goonvean's [redacted] are [redacted] sold in the UK, [redacted].
 - (b) For the same grade, estimated average ex-works price levels to different customers appear to be [redacted] for some grades (eg [redacted]) and [redacted] for other grades (eg [redacted]).
 - (c) AKW's kaolin grades currently imported into the UK have [redacted]. The prices, however, may reflect differences in quality and the cost of production, among other factors.
11. We also considered average changes in price for Imerys's and Goonvean's largest tableware customers in the period from 2009 to 2012. Table 6 shows average increases in prices for Imerys's customers, and Table 7 reports average increases in prices for Goonvean's customers; these are measured as averages of percentage

increase in prices of individual grades (we understand that [X]). We observe the following:

- (a) There have been [X], with the exceptions of [X].
- (b) [X] price increases have been [X] than [X] price increases [X] in 2011 and 2012, but not in 2010 (and in 2009 [X]).

TABLE 6 Average price changes for Imerys's main UK tableware customers, 2009 to 2012

Customer	per cent			
	2009	2010	2011	2012
Dudson*	[X]	[X]	[X]	[X]
Endeka Ceramics	[X]	[X]	[X]	[X]
Furlong	[X]	[X]	[X]	[X]
GCM	[X]	[X]	[X]	[X]
Steelite	[X]	[X]	[X]	[X]

Source: CC analysis of Imerys data.

*From Imerys, Dudson purchases only kaolin imported from New Zealand.

Note: Averages calculated as weighted average price changes across observations (ie each observation is defined by customer, application, kaolin grade, packaging and form), weighted by sales volumes.

TABLE 7 Average price changes for Goonvean's main UK tableware customers, 2009 to 2012

Customer	per cent			
	2009	2010	2011	2012
Dudson		[X]	[X]	[X]
Furlong	[X]	[X]	[X]	[X]
GCM	[X]	[X]	[X]	[X]

Source: CC analysis of Goonvean data.

Note: Averages calculated as weighted average price changes across observations (ie each observation is defined by customer, application, kaolin grade, packaging and form), weighted by sales volumes.

12. We note that [X]. As such, prices changes could also reflect changes in delivery costs or charges, [X].

Overview of the main party customers

Main tableware customers

13. Table 8 summarizes Imerys's customer distribution in the tableware application based on 2012 sales. Imerys has [X] customers in the tableware application. The concentration of Imerys's customers is high as the top customers account for a large part of the revenue generated. The top [X] customers account for [X] per cent of total revenue in the tableware application in the UK. The top 3 customers accounted for [X] per cent of sales revenue in the tableware application. Goonvean had [X] tableware customers in 2012 which purchased more than 100 tonnes. The top 10 customers and top 3 customers accounted for [X] and [X] per cent respectively of its total UK tableware revenue.

TABLE 8 **Tableware applications: number and size of Imerys's and Goonvean's customers, 2012**

<i>Supplier</i>	<i>No of customers with sales >100 tonnes</i>	<i>% revenue top 1 customer</i>	<i>% revenue top 3 customers</i>	<i>% revenue top 10 customers</i>	<i>Total sales £</i>
Imerys	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Goonvean	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys and Goonvean data.

14. Table 9 shows Imerys and Goonvean main customers in the UK, and sales to these customers by grade (in 2012). These customers accounted for [REDACTED] per cent of Imerys's tableware kaolin sales volumes in the UK in 2012, and for nearly [REDACTED] per cent of Goonvean's tableware kaolin sales. It also indicates AKW's sales volumes to one of its UK customers, Furlong. Collectively, these customers accounted for [REDACTED] [90–100] per cent of sales of kaolin to UK tableware customers.

TABLE 9 Tableware kaolin: Imerys and Goonvean main UK customers, 2012

Customer	Supplier	Grade	Sales (tonnes)	Sales (£)	Average price (£/tonne)	Share of volume (%)
Furlong [redacted]*	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Goonvean	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Goonvean	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Goonvean	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Goonvean	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Goonvean	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Goonvean	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	AKW	[redacted]	[redacted]	[redacted]†	[redacted]†	[redacted]
	All	Total	[redacted]	[redacted]		100
[redacted]*	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	Total	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]*	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Goonvean	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	All	Total	[redacted]	[redacted]		100
[redacted]‡	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]*	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	Total	[redacted]	[redacted]	[redacted]	100
[redacted]*	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Goonvean	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	All	Total	[redacted]	[redacted]		100
Valentine Clays [redacted]*	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Imerys	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Goonvean	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Goonvean	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Goonvean	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	All	Total	[redacted]	[redacted]		100
Total UK			[redacted]	[redacted]		
Total Imerys			[redacted]	[redacted]		
Total Goonvean			[redacted]	[redacted]		

Source: CC analysis of Imerys, Goonvean and AKW data.

*The first percentage shows customer's sales volume as a share of total sales volumes of kaolin to UK tableware customers in 2012, and the second percentage shows customer's sales revenue as a share of UK tableware total.

†Estimate, calculated using £/€ exchange rate of 1.234 (Bank of England average 2012 spot rate). This is ex-works price, and does not include transport costs from AKW's site in Germany to Furlong.

‡[redacted] purchases also small quantities of kaolin from Sibelco: around [redacted] tonnes of kaolin grade [redacted] in 2012, at an average price of around £[redacted] per tonne.

Customer switching

Cost of switching

- The main parties submitted that a tableware customer would need to spend the same amount of time/effort in reformulating to switch between Imerys and Goonvean

products as it would switch between Imerys/Goonvean products and another kaolin supplier. Imerys noted that it had received a quote from Ceram Research which indicated that to investigate the effect of substituting one kaolin grade for another on the technical properties of a porcelain body would take six weeks.

16. The main parties submitted that the length of time taken to reformulate was largely a question of the focus of resources. Imerys considered that six to nine months was not an unreasonable period within which reformulation could take place.
17. Evidence we received from tableware customers suggests that the cost of switching is high. GCM told us that the trialling process consisted of small-scale body trials with combinations of kaolins and quantities to arrive at a specification required in the bone china body that would fit the customers' requirements for fired colour, contraction, making properties, vitrification etc. These trials would then be scaled up to pilot plant trials and then full-scale trials at the customers' factories. GCM told us that these trials could take from 2 to 12 months or longer. It estimated the cost of trialling a new product at £1,000 per recipe.
18. GCM said that it would be possible to purchase other kaolin grades but they would not be an exact match for the grades it used presently. It explained that switching kaolin grades would necessitate significant development work and cost in order to reformulate the end-products that it supplied to the ceramic tableware industry and used kaolin in.
19. Steelite told us that the cost to change the size and shape of a ceramic body was very expensive as this cost increased with the amount of bodies it produced. It provided an example saying that the cost was £[redacted] for a new shape and if it had 300 new shapes then that cost would be £[redacted]. Thus, Steelite noted that it would have to be a significant cost increase before it would consider switching; this increase, Steelite explained, could be even above 10 per cent. Regarding the trialling process, Steelite noted that the process consisted of successively trialling larger volumes of material until bulk production. It said that this process lasted around six months and could cost up to £[redacted] depending on the scale.
20. Dudson told us that the trialling costs were dependent on the amount of work needed, both on a laboratory basis and within the production arena. It said that initial costs tended to be reasonably low (the majority being laboratory time) and that costs tended to escalate when product entered production, especially if the production trial showed issues previously unseen. If kaolin met the criteria on a laboratory scale, then a larger production-based trial was undertaken with the production of actual end-product to ensure that the quality of the product met the required in-house criteria. Finally, Dudson told us that the product might undergo extensive trials with the end-user to ensure its fitness for purpose in the marketplace. Dudson said that depending on whether this was a replacement or the production of a new product, the process could take from a minimum of six months to as long as two years.
21. Dudson told us that it had not made many significant changes to its fine china product since its launch in 1985, and that the basic recipe had only been changed once. Dudson explained that, although it would make some small technical adjustments in its formulations, it would be unusual to make a major change with respect to kaolin grades it used, such as changing suppliers.
22. Dudson added that kaolin was not a commodity raw material that one could switch and change overnight. It was a considered decision and once Dudson had a stable supplier it would be content with that.

23. Furlong told us that although some kaolin grades were very similar, it was unusual for one kaolin or ball clay or material supplier to have an exact copy of its competitors' grades that would swap directly.
24. Furlong said that that reformulating ceramic bodies was very time consuming for both supplier and customer as various stages of 'trials' needed to be carried out before the customer was confident enough to turn his manufacturing process over to a new formulation. It added that reformulating bodies could run into tens of thousands of pounds cost-wise for both customer and supplier of tableware bodies.

Evidence on switching

25. There have been no tableware customers switching kaolin suppliers in the last five years.
26. Furlong told us that most supply arrangements had been in place for years and that there had been relatively little switching of products by users of kaolin over the last five to ten years. According to Furlong, there had been a lot of development of higher-quality products in the last five to six years and the industry appeared to have settled and the manufacturers had concentrated on manufacturing. There was relatively little change unless a manufacturer was looking for something different, saw a technical advantage or stumbled upon a new product.
27. Furlong switched from Imerys to imported kaolin from AKW and to Goonvean around ten years ago; further details of this are provided in paragraph 92 below.

Overview of Sibelco

28. The main parties argued that Sibelco was a potential competitor to Imerys and Goonvean in the supply of tableware kaolin in the UK, because, even if it presently did not produce substitutable grades for high-quality tableware, it had the ability to do so because it had access to suitable kaolin deposits in the [REDACTED] pit in Devon. Imerys explained that it produced a number of tableware grades from [REDACTED] deposits up to 2008, when it ceased to produce in Devon and leased the [REDACTED] pit (and [REDACTED] pit) to Sibelco. Imerys submitted that, until 2008, it produced SSP, its highest-quality grade, and Regal kaolin grades from [REDACTED] deposits.
29. At that time, the production of SSP from [REDACTED] deposits required a substantial amount of processing equipment to produce the final grade, including centrifuges, magnets, and grinding.
30. Sibelco told us that it competed with Imerys and Goonvean in the limited earthenware and stoneware market. It explained that its kaolin colour meant that it was more suitable for sanitaryware as it was not white enough for higher-grade uses, such as tableware. If it wanted to produce kaolin for higher-grade uses, it would need to process the material more fully, which would require equipment such as centrifuges, which Sibelco currently did not have. Sibelco noted that the nature of the kaolin it currently obtained from its Cornwood deposit meant that it would probably not be able to process it to the degree necessary to produce kaolin of the strength and colour required to match that made by producers of higher-grade kaolin.
31. Sibelco told us that it would not be able to produce similar or substitutable grades to Imerys's SSP or SP because it did not have suitable processing facilities (centrifuges, grinders, etc) or would need to blend the material. It said that it would not be

able to produce similar or substitutable grades to Goonvean's Diamond Star, DTW or DP primarily because it did not have suitable deposits.

32. We note that the [REDACTED] agreement that Sibelco has with Imerys that is part of the Hemerdon lease requires that [REDACTED]. Iron content influences the fired properties of kaolin used in ceramics (whiteness in particular). It is unclear whether this restriction may limit Sibelco's access to deposits suitable for tableware kaolin grades). Imerys noted that Sibelco had access to sufficient material of suitable quality (including iron content) at [REDACTED] to produce tableware grades in competition with parties, [REDACTED].

Evidence on the main customers

33. Here we provide a customer-by-customer overview for the main tableware customers.

Steelite

34. Steelite is an international manufacturer and supplier of tabletop goods for use in the hospitality sector. Its primary UK business involves manufacture of ceramic tableware for the hotel and catering sector. The company's core chinaware products are manufactured at its factory in Stoke-on-Trent.

Sourcing of kaolin

35. [REDACTED]
36. Steelite told us that kaolin was very important because it allowed making the pieces of a ceramic product and also brought other attributes, such as fired colour and fired whiteness. Kaolin represented between [REDACTED] and [REDACTED] per cent of the recipe across all Steelite's product range.

Alternatives and switching

Imerys/Goonvean

37. Steelite told us that [REDACTED].
38. Steelite said that there were no direct equivalents in terms of the chemical and physical properties of kaolin that it was using. It had trialled DP Plus kaolin grade, the Goonvean equivalent of Imerys's SP, and whilst it was not an exact fit, and nor would any other kaolin that Steelite was aware of in the world at the moment be an exact replacement, it was close enough for Steelite to say that it could work with Goonvean's DP Plus.
39. Steelite over the last five years purchased kaolin from Imerys and had trialled a Goonvean product although it never switched to it. [REDACTED]

Sibelco

40. With regard to Sibelco, Steelite told us that kaolin grades produced by Sibelco did not have the right properties that it needed for its products. It did not view Sibelco as an alternative supplier for kaolin because its kaolins were higher in iron and were used more for earthenware bodies and sanitaryware.

Imported kaolin

- 41. [REDACTED]
- 42. [REDACTED]

Buyer power

- 43. Steelite said that part of its buyer power came from the fact that it was a large buyer of a specific kaolin product.
- 44. [REDACTED]

Effect of the merger

- 45. Steelite believed that the merger would lead to a contraction of the range of products available to the industry and would not want to see this. It felt it would lead to a monopoly situation for Imerys.

Global Ceramic Materials

- 46. GCM is part of the Vion Food Group and a supplier of bone ash used in making fine bone-china tableware. It told us that china body business accounted for 35 per cent of its overall sales volumes. Of this, approximately 15 per cent was in the UK and about 85 per cent was exported.

Sourcing of kaolin

- 47. GCM purchases the SP and Grolleg kaolin grades from Imerys, the DTW kaolin grade from Goonvean and AKW's OKA kaolin grade through Furlong. GCM told us that it negotiated agreements annually and in January got a letter from all the UK kaolin suppliers with the following year's prices. GCM received on average two deliveries of kaolin per week in bulk form.
- 48. GCM told us that kaolin was an integral part of its bone china body preparation business, constituting approximately 25 per cent of the body recipe.

Alternatives and switching

Imerys/Goonvean

- 49. GCM told us that only Goonvean and Imerys supplied kaolin grades suitable for the high-quality bone-china tableware it produced in the UK. Goonvean's equivalent to Imerys's Grolleg was DTW, and Goonvean's equivalent for Imerys's SP was DP Plus.
- 50. GCM said that it would pass on a small price increase (up to [REDACTED] per cent) from Imerys, and it would look to change its purchasing to Goonvean where possible for a large price increase ([REDACTED] per cent).
- 51. GCM would continue to purchase Goonvean's kaolin after a small increase in Goonvean's prices as Goonvean's kaolin was less expensive than other kaolin suppliers. It would switch to purchasing an alternative Imerys grade if Goonvean increased prices by a large amount. In case both Imerys and Goonvean increased

prices, it would continue to purchase from Imerys and Goonvean but would have to pass the increase in prices on to its customers.

52. GCM's concern from the merger was that there would be fewer alternative suppliers in the UK.

Sibelco

53. GCM told us that it had not considered switching to Sibelco, because Sibelco's kaolin was not of sufficiently high quality in tableware applications.

Imported kaolin

54. GCM said that it used kaolin imported from AKW only for specialist specification due to the added cost of importation. Imported kaolin was more expensive and it would use AKW clays only where it would be absolutely necessary to improve the whiteness of a product (we understand it purchases AKW's kaolin from Furlong).

Buyer power

55. GCM said that the fact that it was part of a much larger company did not give it any buying power, because the Vion Food Group was primarily involved in animal by-products while GCM was a niche activity within the overall business, and thus kaolin purchases were a UK-only operation.
56. GCM suggested that it had limited negotiating power with kaolin suppliers and so had to agree inflation rises in kaolin prices annually, having, however, good relationships with them.
57. GCM added that sourcing kaolin together with other minerals from the same supplier was used to increase its purchasing power and strengthen relationships with the supplier.

Effect of the merger

58. GCM had concerns that Imerys could use its position should the merger proceed by increasing prices significantly, as there would be no viable alternatives in the UK.

Endeka Ceramics

59. Endeka Ceramics (Endeka) manufactures glazes, prepared clay bodies and milled mineral composites for use in the sanitaryware, tableware and tiles industries.

Sourcing of kaolin

60. Endeka purchases from Imerys and Sibelco. It purchases small quantities of [redacted] grade from Sibelco ([redacted] tonnes in 2012). It has also purchased from Goonvean in the past, but not in 2012. Endeka told us that it had 12-month agreements and received weekly deliveries in bulk or in packed forms.

Alternatives and switching

Imerys/Goonvean

61. Endeka is currently supplied by Imerys, and it told us that it viewed Goonvean as an alternative supplier.

Sibelco

62. Endeka said that it considered Sibelco as an alternative supplier of kaolin. We understand that Endeka may be using this kaolin in the production of earthenware, sanitaryware or glazes products.

Imported kaolin

63. Endeka did not import any clays that were available in the UK and was not aware of any cost-effective non-UK suppliers. It purchases kaolin grade produced in New Zealand from Imerys.

Buyer power

64. Imerys submitted that [REDACTED].

Effects of the merger

65. Endeka did not have any concerns with regard to the merger nor did it see any benefits arising from it.

Dudson

66. Dudson is a 213-year-old pottery manufacturer of hotel tableware for the hospitality industry around the world. It produces approximately 13 million tableware pieces a year, of which approximately 30 per cent is sold in the UK and the rest in over 100 countries around the world; its main markets are the UK, USA, Canada, France and Australia.

Sourcing of kaolin

67. Dudson purchases the Diamond Star and DP+ kaolin grades from Goonvean and the Premium Plus kaolin grade from Imerys New Zealand.
68. Dudson told us that it used Goonvean's Diamond Star and Imerys's Premium Plus from New Zealand to produce its finished tableware products. Dudson has maintained the usage of Goonvean Diamond Star alongside Imerys's kaolin in order to de-risk the supply chain. Dudson explained that there was no scope for it to substitute the New Zealand kaolin with Goonvean's kaolin.
69. Dudson receives deliveries in bulk or bagged form, on a regular basis (often weekly); the number of deliveries depended on the levels of incoming orders it received from its customers. The supply terms, including pricing, are determined and fixed in an annual review. There are generally no formal tenders unless the body recipe is being changed when formal quotes would be obtained from potential kaolin suppliers.

70. Dudson told us that kaolin was one of the main ingredients of ceramic bodies, providing makeability and plasticity of the body, and that kaolin made up about 30 to 40 per cent of the ceramic body.

Alternatives and switching

Imerys/Goonvean

71. Ten years ago Dudson changed from Imerys's SSP to the Goonvean material that it currently uses. Dudson said that this was a 12-month programme, starting with laboratory tests and scaling that up to production trials; this required a number of trials because the risk to the business was significant. It said that switching was not a quick process as it was approached with an incremental escalation of the volumes over a period of time and repeated testing and market evaluation.
72. In case Goonvean's Diamond Star was no longer available, Dudson suggested that it could probably find a substitute more easily than it could for Imerys's Premium Plus grade. It said that it used Diamond Star for its technical qualities and had switched from Imerys kaolin grade to the Goonvean kaolin because of a better technical consistency of the latter.
73. Dudson was approached by Imerys in order to switch back to Imerys's SSP material (which Dudson had switched away from ten years ago). It did not, however, switch back to Imerys because it had concerns about the consistency of Imerys's material. Imerys had repeatedly refined its SSP product over the years and had tried to reassure Dudson that it could now work with its specification. However, Dudson was not convinced enough thus far to change: it was not financially attractive and Dudson was satisfied with its existing supplier (Goonvean). Dudson said that it got a better service from Goonvean because it was a larger customer to Goonvean, which was more willing to accommodate Dudson's specifications than Imerys.

Sibelco

74. Dudson told us that the material Sibelco had was of a lower quality than what Dudson would be looking for.

Imported kaolin

75. Dudson imported some kaolin from Imerys in New Zealand. This was a long-standing arrangement that Dudson had undertaken for many years as it required particular kaolin for which it had not find an alternative to date (it was a high-value premium product). Dudson estimated that 25 to 30 per cent of the delivered price of the kaolin it imported from New Zealand represented freight charges.
76. With regard to AKW, Dudson said that it could not currently offer kaolin of comparable quality to those it used currently .

Effect of the merger

77. Dudson was concerned that the Goonvean mine should remain viable to ensure continuity of supply. It was also concerned that one strong supplier would be able to control pricing.

Furlong Mills

78. Furlong was established in 1842 and is one of the UK's major producers of ceramic bodies and suppliers of materials to the ceramic industry, providing materials and support to a customer base which includes its shareholding companies Dudson (Holdings) Ltd, Portmeirion Group plc and Churchill China plc. Furlong's main business is within the UK (Stoke-on-Trent). Its product range includes silica, feldspar, alumina, ceramic bodies and industry-specific composite ceramic fluxes that are processed to exact customer specifications. Furlong told us that it distributed around 10 per cent of the kaolin it purchased—it distributed AKW's and Goonvean's kaolin, but not Imerys's kaolin. Furlong explained that it purchased Goonvean's products in bulk, and sold it to small customers within Stoke-on-Trent that were difficult for Goonvean to supply directly.

Sourcing of kaolin

79. Furlong purchases SSP, SP and Regal from Imerys. It purchases Diamond Star, DP, Diamond Porcelain Plus (DP+), DTW, DTC and Diamond Ultrabright from Goonvean. [X] It also purchases OKA grade from AKW.
80. Furlong told us that it had deliveries on a daily, weekly or monthly basis and that it mostly purchased bulk kaolin although it also purchased small amounts of kaolin packaged in 1 tonne bulk bags (noodle form) and 25 kg bags (powder form).
81. Furlong explained that it negotiated price with its suppliers based on volume it would purchase or on turnover. In most cases it did not have an alternative and therefore tried to build good working relationships with the suppliers in the belief that they understood its business and what the industry could afford to pay. It said that it did not have formal agreements on price with its suppliers; it would also advise suppliers regarding the volumes needed for the next 12 months and then price negotiations revolved around that volume.
82. Furlong purchases kaolin and ball clays from Imerys, kaolin from Goonvean, kaolin and feldspar from AKW and hard materials (such as sand and dolomite) and ball clay from Sibelco.
83. Furlong told us that the amount of kaolin within a typical ceramic body was around 25 to 35 per cent, depending on the value of the body. If it was an inexpensive ceramic body, the quality of the kaolin would be relatively low as it would be relatively high in iron. If, on the other hand, it was a very white firing hotelware-type body, the cost of the kaolin could be 30 to 35 per cent of the body; for inexpensive earthenware this could be 20 per cent.

Alternatives and switching

Imerys/Goonvean

84. Furlong told us that it thought Goonvean's kaolins were performing better than Imerys's kaolins in the new pressure cast manufacturing process, in which the UK tableware industry had been investing and where Furlong had also spent a lot of time and effort to develop the required ceramic bodies.
85. Furlong said that Imerys and Goonvean kaolins also had very different 'fired contraction' properties which made a direct change in ceramic body formulations difficult as the size of the fired product would be greater or smaller depending on which kaolin

was used. Imerys clays were, in Furlong's view, probably better 'all round kaolins' for all-purpose everyday use as they had good plastic-making and slip-casting (while not pressure-casting) properties.

86. Although the kaolin grades Furlong purchased from the parties were similar, they also had characteristics that were not directly replaceable. Furlong told us that Imerys's Regal and Goonvean's DTW were the more similar of the grades it purchased. It blended these products 50:50 to give each supplier an equal share in its business.
87. Furlong told us that it was not very common to have suppliers competing for its business by offering attractive prices or undercutting existing suppliers, partly because the industry had contracted significantly in the last years, with the small volumes involved not making it worthwhile. Specifically for Imerys and Goonvean, it told us that they were not competing strongly because their products were not interchangeable.
88. Furlong said that its response to a potential increase in prices by Goonvean or AKW would depend on the increase. For small increases, it would try to absorb the change or try to reformulate very slightly depending on the work involved in reformulating. It would look at how much it was going to save as a ratio to the work involved, and it would have to be quite a significant saving for it to enter into a year's development work.

Sibelco

89. Furlong told us that Sibelco's kaolin was higher in iron and tended to be used or was used in the past in the production of old-fashioned earthenware-type bodies. Sibelco's kaolins were used mainly in the sanitaryware industry where producers were not looking for a white ceramic body.
90. Furlong said that Sibelco was not competing for its business.

Imported kaolin

91. According to Furlong, there could be alternatives to Goonvean's kaolin outside the UK that could perform similarly, but it would be difficult to bring this kaolin into the UK. Bringing material in from overseas involved importing 2,000-, 3,000- or 4,000-tonne shiploads, which was costly and risky. Additionally there would be storage costs. Thus, Furlong first looked at the easiest route, which was to source known materials in the UK.
92. Ten years ago, Furlong switched some kaolin volumes from Imerys to AKW. It said that at that time Imerys supplied 95 to 99 per cent of its requirements. It started to look at alternative suppliers as a cost-saving exercise but also in order to expand its knowledge of the market and to expand the supply chain. It did not find a direct replacement but managed to use 5 to 10 per cent of AKW's kaolin which drastically reduced its overall costs. Following development work into other ceramic body areas, Furlong found that the AKW product actually gave a definite technical advantage.
93. Furlong said that AKW's kaolin was not the kind of kaolin that could be used everywhere—it was relatively expensive and had differing technical performance, but there were body manufacturers within Stoke-on-Trent which were interested in these products. Furlong had storage facilities where it could store the UK and the imported products it purchased.

94. Furlong told us that it was not easy to bring AKW's product from Germany into the UK. However, it would still import despite the effort involved, because it was an alternative that gave good technical performance. It imported AKW's product from Germany in tipper trucks, and the cost of bringing kaolin to the UK could be between 35 and 50 per cent of the value. It estimated the cost of bringing a product from Cornwall to Stoke-on-Trent to be about £15 to £16 per tonne, while to bring kaolin from Germany in tipper trucks would be around £70 or £80 per tonne. In addition, the logistics were not easy and Furlong tended to arrange all of its own transport for this product.
95. Furlong explained that it could not import kaolin through a port unless it brought in 4,000- to 5,000-tonne vessels. The cost to transport shiploads of such volumes would be around £20 a tonne but then the storage costs would be substantial. Since it used a small volume of AKW kaolin, the time to use a shipload's worth of material would be up to five years and it would be difficult to get the port or the docks to actually store that volume for that length of time. Furlong noted that ports tended to want to turn around 1,000 tonnes a month through the storage to keep costs down, and that it would need to import 5,000 to 10,000 tonnes a year for it to become economically viable from the position of the supplier and the storage position.
96. Furlong said that the cost of bringing in a flatbed load of bagged material would be even higher because there was also the packaging cost while the flatbed was slightly more expensive than a tipper truck in terms of transport cost. Furlong believed that ex-works prices were similar for UK and non-UK kaolin and that the differences were in the transport costs. Another problem with imports that Furlong noted was the fluctuation in the exchange rates.

Buyer power

97. Imerys said that Furlong Mills had a powerful position in the UK kaolin tableware supply chain, as both a major customer in its own right and a distributor and could sponsor entry or expansion by rival suppliers, including increasing imports from AKW. Imerys said that kaolin purchases represented [] per cent of Furlong's total purchases from Imerys, and that Furlong could reduce its purchases if Imerys increased prices.
98. Furlong told us that purchasing multiple products from a single supplier gave it a little more buyer power in its negotiations with the suppliers. It noted that price negotiations were normally quite fair across the board.

Effect of the merger

99. In terms of product range, consistency of supply and quality, Furlong believed that Imerys and Goonvean were both very good companies. However, from the UK customer's point of view, it thought it was disappointing that another supplier would disappear from an increasingly fragile supply chain. There was a concern about what would happen to prices and the possibility that the product range or the portfolio of both companies might reduce over time. It noted that there would be only one supplier controlling the UK kaolin suitable for the high-quality tableware that the ceramic industry in the UK was now producing.
100. Furlong thought that a potential benefit of the merger might be the security of the UK's kaolin reserves, particularly if Imerys was able to extract the quality kaolins that Furlong required.

Performance-mineral applications

Introduction

1. This appendix sets out supporting evidence for kaolin supplied to performance-mineral applications.
2. This appendix is structured as follows:
 - (a) shares of supply;
 - (b) kaolin sales and prices;
 - (c) overview of Sibelco;
 - (d) customer overview, including analysis of switching; and
 - (e) a summary of evidence on a customer-by-customer basis for the main UK customers.

Shares of supply

All performance-mineral applications

3. Table 1 shows UK shares of supply in kaolin supplied to performance-mineral applications in 2012. The table shows the following:
 - (a) In terms of sales to UK customers, Imerys has a share of [70–80] per cent,¹ Goonvean has a share of [10–20] per cent, Sibelco has a share of [0–5] per cent, and imported kaolin has a share of [0–5] per cent.²
 - (b) In terms of total sales of UK production, which proxies for UK production of performance-mineral kaolin: Imerys has a [70–80] per cent share of UK production, Goonvean has a [20–30] per cent share and Sibelco has a [0–5] per cent share.³
 - (c) A significant proportion of Imerys's and Goonvean's performance-mineral kaolin produced in the UK is sold abroad ([60–70] and [70–80] per cent respectively). Sibelco's export sales of UK-produced performance-mineral kaolin represent a small proportion ([10–20] per cent).

¹ Imerys's sales in the UK to performance-mineral applications include small volumes—approximately [80] tonnes in 2012—of performance-mineral kaolin imported from France and from the USA.

² We note, however, that the share of importers is likely to be underestimated since our data does not capture all the performance minerals imported in the UK, either directly by end-users or by distributors.

³ The main parties noted that differences between sales and production were accounted for by production wastage which occurred at the secondary processing stage.

TABLE 1 **Kaolin for performance-mineral applications: UK shares of supply, 2012**

Supplier	UK sales		Total sales of UK production		Exports	
	Volume kt	Share of volume %	Volume kt	Share of volume %	Volume kt	Share of UK production %
Imerys	[X]	[70–80]	[X]	[70–80]	[X]	[60–70]
Goonvean	[X]	[10–20]	[X]	[20–30]	[X]	[70–80]
Sibelco	[X]	[0–5]	[X]	[0–5]	[X]	[10–20]
Thiele	[X]	[X]	-	-	-	-
BASF	[X]	[X]	-	-	-	-
Other	[X]	[X]	-	-	-	-
Total imports	[X]	[0–5]	-	-	-	-
Total	[X]	100	[X]	100	[X]	[60–70]

Source: CC analysis of Imerys, Goonvean and third party data.

Note: UK sales include kaolin sales in the UK, whether UK-produced or imported. Total sales of UK production include sales of UK-produced kaolin in the UK and abroad (ie exports).

Grades of performance-mineral applications

4. As described in Appendix D, performance-mineral kaolin grades differ in their qualities, ranging from lower-quality grades to very high-quality, processed performance-mineral grades. Imerys classifies its performance-mineral kaolin grades into commodity performance minerals (CPM) and premium performance minerals (PPM), although these terms are not widely used by customers.
5. Supreme in particular is a highly processed hydrous kaolin with very high brightness and fine particle size. We were told that neither Goonvean nor Sibelco could produce comparable grades to Supreme. Imerys records Supreme as a PPM grade in its data records, along with some other grades for which sales in the UK are very small.⁴ The main parties submitted that all of Goonvean’s performance-mineral grades were CPM grades.
6. We noted that the terms CPM and PPM were not widely used and understood and therefore we did not adopt them in our main analysis. For the purposes of this appendix we found it useful to use the terms as shorthand and, in particular, to distinguish Imerys’s highly processed grades—that is, PPM—from other performance-mineral grades supplied by both parties.
7. In classifying the grades in this way, we allocated grades to each category in accordance with the data as it was supplied to us by the main parties. This categorized Imerys’s Speswhite grade as a CPM. We noted that Imerys submitted that it considered Speswhite to be a PPM grade and that it marketed it as such. In our assessment, we did not take into account internal classifications of grades as we considered the effect of the merger in the light of our assessment of the competitive constraints on particular products. Our competitive assessment of Speswhite, and consideration of the parties’ arguments on the extent of competition between them for particular grades, is set in Section 7 of the main report. The remainder of this appendix includes Speswhite within the category of CPM grades.

⁴ The other highly-processed kaolin grades (PPM grades in Imerys’s classification) with positive sales in the UK in 2012 were: Aquafat Supreme, P10, P20, STO, Infilin 813, Infilin 1735, HEAVYK.

8. Tables 2 and 3 show UK market shares in kaolin supplied to performance-mineral applications, where Table 2 shows shares for high-quality grades (PPM), and Table 3 shows shares for CPM kaolin grades:

(a) In PPM kaolin, Imerys is the only producer in the UK of these kaolin grades, but there are some imports into the UK of high-quality performance-mineral kaolin grades. Imerys's share of UK sales is estimated to be [90–100] per cent and the rest is imports, although this is likely to be an underestimate, as we do not have data covering the whole of the market, and we understand that there are imports of kaolin not captured in the numbers below, in particular in relation to the imports by distributors of kaolin and other minerals.

(b) In CPM kaolin, Imerys has a [60–70] per cent share of sales, Goonvean has [30–40] per cent, and Sibelco has [0–5] per cent.

TABLE 2 **Kaolin for PPM applications: UK shares of supply and shares of production, 2012**

Supplier	UK sales		Total sales of UK production		Exports	
	Volume kt	Share of volume %	Volume kt	Share of volume %	Volume kt	Share of UK production %
Imerys	[3]	[90–100]	[3]	100	[3]	[50–60]
Thiele	[3]	[3]				
BASF	[3]	[3]				
Other	[3]	[3]				
Total imports	[3]	[0–10]				
Total	[3]	100				

Source: CC analysis of Imerys and third party data.

Note: UK sales include kaolin sales in the UK, whether UK-produced or imported. Total sales of UK production include sales of UK-produced kaolin in the UK and abroad (ie exports).

TABLE 3 **Kaolin for CPM applications: UK shares of supply and shares of production, 2012**

Supplier	UK sales		Total sales of UK production		Exports	
	Volume kt	Share of volume %	Volume kt	Share of volume %	Volume kt	Share of UK production %
Imerys*	[3]	[60–70]	[3]	[60–70]	[3]	[60–70]
Goonvean	[3]	[30–40]	[3]	[30–40]	[3]	[70–80]
Sibelco	[3]	[0–5]	[3]	[0–5]	[3]	[10–20]
Total UK producers	[3]		[3]	[3]	[3]	[70–80]

Source: CC analysis of Imerys, Goonvean and third party data.

*Imerys's UK sales include small volumes (around [~~3~~] tonnes) of imported kaolin.

Note: UK sales include kaolin sales in the UK, whether UK-produced or imported. Total sales of UK production include sales of UK-produced kaolin in the UK and abroad (ie exports).

9. Table 4 shows volumes and revenues of kaolin sold by Imerys and Goonvean to performance-mineral applications in the UK in 2012. It also shows total UK production by the main parties. Imerys's UK sales to CPM applications amounted to [~~3~~] kt and [~~3~~] per cent of Imerys's total kaolin revenue ([~~3~~] per cent if paper coating and PPM are excluded from the total UK sales). Goonvean's UK sales to CPM applications amounted to [~~3~~] kt and [~~3~~] per cent of Goonvean's total kaolin revenue ([~~3~~] per cent if kaolin sold to life sciences is excluded from the total UK sales).

10. In terms of UK production and exports, we observe that Imerys produced [x] kt of CPM grade kaolin in the UK in 2012, which implies that [x] per cent of CPM kaolin produced in the UK was exported. Goonvean produced [x] kt of CPM grade kaolin, which indicates that it exported [x] per cent of CPM kaolin.

TABLE 4 Imerys and Goonvean total sales and sales to performance-mineral applications, 2012

Kaolin application	Imerys*				Goonvean			
	Volume kt	Value £'000	Share of volume %	Share of value %	Volume kt	Value £'000	Share of volume %	Share of value %
Total UK sales†	[x]	[x]			[x]	[x]		
Of which:								
CPM	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
PPM	[x]	[x]	[x]	[x]	[x]	[x]		
Total sales of UK production†	[x]	[x]			[x]	[x]		
Of which:								
CPM	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
PPM	[x]	[x]	[x]	[x]	-	-		

Source: CC analysis of Imerys's and Goonvean's data.

*For Imerys, total sales of UK produced kaolin include internal export sales (primarily sales of sanitaryware and tableware grades to Imerys body manufacturing plants outside the UK), but not its sales of UK kaolin to Sibelco and Goonvean, which amounted to [x] kt in 2012. Sales of Sibelco are not included in Imerys's UK sales figures; in 2012, Imerys sold [x] tonnes of performance-mineral grade kaolin to Sibelco.

†Total UK sales and total sales of UK-produced kaolin (ie UK sales plus export sales) include sales of hydrous kaolin to all applications.

Note: Sales revenue is calculated by adding sales revenues of all customers and of all individual grades, which includes a mix of delivery terms (ie some will include transport, some not), product forms, and packaging types (ie some will be bulk, some will be packaged).

Kaolin sales and prices

Trends in sales over time

11. Table 5 shows Imerys UK sales and total sales of UK production of kaolin sold to performance-mineral applications. Table 6 shows the same for Goonvean. We observe that in the last five years Imerys's UK production and UK sales of CPM-grade kaolin have [x], whereas its sales of PPM-grade kaolin have [x], with production and sales of performance-mineral kaolin [x] overall. Goonvean's production and sales of performance-mineral kaolin grades in the UK have [x] in the last five years.

TABLE 5 **Imerys UK kaolin sales and total sales of UK production: performance-mineral applications, 2008 to 2012**

<i>Kaolin application</i>	<i>kt</i>				
	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>
<i>UK sales</i>					
Total sales volume	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Of which:</i>					
CPM	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
PPM	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
PM total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Total sales of UK production</i>					
Total sales volume	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Of which:</i>					
CPM	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
PPM	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
PM total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys data.

Note: Total UK-produced sales are calculated by adding UK sales of UK-produced material and export sales. Imerys's figures do not include sales of kaolin to Sibelco and Goonvean, which amounted to around [REDACTED] kt in 2012 (primarily sales of paper-filler kaolin to Sibelco). Total UK sales and total sales of UK-produced kaolin (ie UK sales plus export sales) include sales of hydrous kaolin to all applications (but not calcined kaolin). For Imerys, total sales of UK-produced kaolin include internal export sales (primarily sales of sanitaryware and tableware grades to Imerys body manufacturing plants outside the UK).

TABLE 6 **Goonvean UK kaolin sales and total sales of UK production: performance-mineral applications, 2008 to 2012**

<i>Kaolin application</i>	<i>kt</i>				
	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>
<i>UK sales</i>					
Total sales volume	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Of which:</i>					
CPM	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Total sales of UK production</i>					
Total sales volume	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Of which:</i>					
CPM	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Goonvean data.

Note: Total UK-produced sales are calculated by adding UK sales of UK-produced material and export sales. Goonvean's total sales figures include imported and blended tableware kaolin. Total UK sales and total sales of UK-produced kaolin (ie UK sales plus export sales) include sales of hydrous kaolin to all applications.

Sales of main performance-mineral kaolin grades

- Table 7 summarizes sales and prices of the main performance-mineral kaolin grades supplied by the main parties in the UK. Imerys's main performance-mineral grades are Supreme (a PPM grade), Speswhite, Polwhite B and Polwhite E. The main Goonvean performance-mineral grade is Crystal Sheen.

TABLE 7 **Kaolin for performance-mineral applications: sales and prices of main grades in the UK, 2012**

<i>Supplier and grade</i>	<i>Volume kt</i>	<i>Value £'000</i>	<i>Average price £/tonne</i>	<i>Share of volume %</i>
<i>Imerys</i>				
Supreme (PPM)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Speswhite	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Polwhite B	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Polwhite E	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Other *	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Goonvean</i>				
Crystal Sheen	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Opal Beta	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Opal Gamma	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Opal Epsilon	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Opal Alpha	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Other	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys and Goonvean data.

*For Imerys, 'other' grades include small volumes of performance-mineral grades imported from France and the USA. This also includes [REDACTED]. Average prices are volume weighted.

Analysis of prices

13. Table 8 shows average prices for Imerys's and Goonvean's main performance-mineral kaolin grades over time (it also includes Imerys PPM grade, Supreme). We observe that prices have [REDACTED]. We also observe that there is a significant dispersion in prices across performance-mineral kaolin grades.

TABLE 8 **Average prices of the parties' main performance-mineral kaolin grades, 2008 to 2012**

<i>Kaolin grade</i>	£				
	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>
<i>Imerys</i>					
Average price:					
Supreme (PPM)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Speswite	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Polwhite B	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Polwhite E	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Goonvean</i>					
Average price:					
Crystal Sheen	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Opal Beta	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Opal Gamma	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Opal Epsilon	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Opal Alpha	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys and Goonvean data.

Note: [REDACTED].

14. We also examined average price changes for Imerys's and Goonvean's largest customers in performance-mineral applications, as reported in Table 9. [REDACTED] Overall, [REDACTED].

TABLE 9 Average price changes for Imerys's and Goonvean's largest performance-mineral customers, 2009 to 2012

Supplier	Customer	2009	2010	2011	2012
Imerys	Akzo Nobel	[X]	[X]	[X]	[X]
	Bostik	[X]	[X]	[X]	[X]
	Crown Paints	[X]	[X]	[X]	[X]
	Flint Ink	[X]	[X]	[X]	[X]
	RBH	[X]	[X]	[X]	[X]
	Whitchem	[X]	[X]	[X]	[X]
Goonvean	Armstrong			[X]	[X]
	EOC UK Ltd		[X]	[X]	[X]
	IT & C Ltd		[X]		[X]
	Industrial Latex Compounds			[X]	[X]
	RA Watts Ltd	[X]	[X]	[X]	[X]
	RBH	[X]	[X]	[X]	[X]
	RaKem	[X]	[X]	[X]	[X]
	Thor Specialities (UK) Ltd		[X]	[X]	[X]
	Winn & Coales	[X]	[X]	[X]	[X]

Source: CC analysis of Imerys and Goonvean data.

Note: Averages calculated as weighted average price changes across observations (ie each observation is defined by customer, application, kaolin grade, packaging and form), weighted by sales volumes.

15. We also examined whether average changes in kaolin prices differed between the larger customers and smaller customers. We examined average price changes for Imerys's and Goonvean's largest performance-mineral customers and for all other customers, and Table 10 reports the results for these two groups from 2009 to 2012 (we have not included Supreme or other 'premium' performance-mineral grades). We do not see any consistent pattern across the main parties or across the years [X].

TABLE 10 Average price changes by performance-mineral customer size, 2009 to 2012

Supplier and customer group	2009	2010	2011	2012
<i>Imerys</i>				
Top 15 customers	[X]	[X]	[X]	[X]
Other	[X]	[X]	[X]	[X]
<i>Goonvean</i>				
Top 15 customers	[X]	[X]	[X]	[X]
Other customers	[X]	[X]	[X]	[X]

Source: CC analysis of Imerys and Goonvean data.

Note: Averages calculated as weighted average price changes across observations (ie each observation is defined by customer, application, kaolin grade, packaging and form), weighted by sales volumes.

16. The main parties submitted the following observations on our analysis:
- They noted that we excluded credits and debits from our calculations, and therefore the average price changes were not a true reflection of the prices faced by Imerys's customers. We conducted a sensitivity analysis that included entries that Imerys described as debits and credits, and we did not find it made any noticeable difference to our results.
 - The main parties submitted that our analysis used delivered prices and therefore did not control for changes in transport costs and other expenses or rebates. They noted that while delivery terms, which are taken account in our analysis, may have been relative stable over time, there has been a marked general increase in delivery costs over time, and that delivery costs to individual cus-

tomers in any given year may vary depending on the frequency of deliveries and the volumes of deliveries. We note that this does not affect our analysis comparing delivered price increases across customers as long as there have not been systematic differences in changes of delivery costs between customers, and we have not seen evidence that this would be the case.

- (c) The main parties pointed out that some costs of production have increased significantly in recent years, and that our analysis does not take this into account. We note that our analysis does not aim to explain changes in prices over time or how they relate to changes in costs, but to explore how prices have changed for individual customers. Nevertheless, we agree that changes in underlying costs, and the extent to which these changes differ between customers, will affect the observed average changes in prices to individual customers.

Analysis of [redacted] pricing

17. We compared changes in prices [redacted]. In order to make like-for-like comparisons, we analysed pricing of kaolin grades that are [redacted].⁵
18. As described below, this analysis shows that both [redacted]
19. Table 11 lists the main [redacted] customers for [redacted] in the UK. [redacted] is the only [redacted] customer taking [redacted], and it gets it delivered in bulk form. There are a number of [redacted] purchasing [redacted] in the UK (around [redacted] in the period from 2008 to 2012); Table 11 lists the main ones that have made regular purchases—this includes manufacturers [redacted]. The volumes purchased by [redacted] customers are significantly smaller than the volumes of bulk [redacted] purchased by [redacted].
20. Table 12 lists average delivered prices by customer. We observe that average prices of [redacted] sold to [redacted]. This may be due to the fact that [redacted] is sold to [redacted] in bagged form which is more expensive than bulk, and/or due to volume discounts [redacted]. For [redacted], we also observe that customers purchasing higher volumes generally have lower prices—[redacted]). Higher volumes may be less expensive to deliver on a per tonne basis.

TABLE 11 Purchases of [redacted] from Imerys by [redacted] in the UK, 2008 to 2012

Customer	tonnes				
	2008	2009	2010	2011	2012
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: CC analysis of Imerys's data.

⁵ There are some further Imerys and Goonvean grades that are supplied [redacted], but not in the UK, and we did not include non-UK sales in our analysis as it would not be a like-for-like comparison. There are at least two further Imerys and Goonvean grades that are sold to [redacted] in the UK: [redacted] and [redacted]. However, sales to [redacted] to make any meaningful comparisons.

TABLE 12 Average delivered prices of [redacted] in the UK, 2008 to 2012

	£/tonne				
Customer	2008	2009	2010	2011	2012
[redacted]		[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: CC analysis of Imerys's data.

21. Table 13 shows average price changes (delivered prices) for these [redacted]. We compare price changes for [redacted] with price changes for [redacted], for years 2010 to 2012. [redacted] had a higher price increase on [redacted] than [redacted] in 2010, but in 2011 and 2012 [redacted] had a lower price increase than [redacted].

TABLE 13 Average changes in prices to [redacted] in the UK, 2009 to 2012

	per cent			
Customer	2009	2010	2011	2012
[redacted]		[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: CC analysis of Imerys's data.

Note: Change in delivered price.

22. Table 14 shows average price changes by [redacted]. It confirms that in 2010 [redacted] had a higher price increase than [redacted], and that in 2011 and 2012 [redacted] had a much lower price increase than [redacted]. In 2011 and 2012, price increases to [redacted] were higher also in absolute terms—eg an increase of £[redacted] per tonne for [redacted] on average versus a price increase of £[redacted] per tonne for [redacted]; this is due to a combination of higher price levels and higher percentage price increases for [redacted] than [redacted].

TABLE 14 Average changes in prices to [REDACTED] in the UK [REDACTED], 2009 to 2012

Customer	2009	2010	2011	2012
<i>£/tonne change</i>				
[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>% change</i>				
[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys's data.

Note: Average changes in delivered prices for the customers listed in Tables 2 and 3 above.

23. The results show that, [REDACTED], price increases [REDACTED] have been lower than price increases [REDACTED] on average in 2011 and 2012, although they were higher in 2010.
24. The main parties commented that the sample [REDACTED] used for this analysis was too small to draw any reliable comparisons, as we used [REDACTED]. We note that [REDACTED]. The main parties also noted that our analysis did not account for variations in volume, delivery terms, delivery locations and distances, product form and other factors, which would affect the cost of supplying individual customers. We agree that all these factors could affect the cost of supplying customers, and therefore have controlled for the differences in the cost of supplying individual customers by examining *changes* in price over time for individual customers, rather than price *levels*. However, we would expect that changes in costs of supplying individual customers move similarly each year because of general cost increases, eg fuel and energy, and we have not seen evidence to suggest that there are differences across customers in the way the cost of supplying them changes; therefore changes in the cost of supplying are unlikely to explain the differences in changes in prices to individual customers.

Overview of Sibelco

25. The main parties argued that Sibelco was a strong competitive constraint in the market for performance-mineral applications, and would continue to be such post-merger:
 - (a) Sibelco produced and supplied performance-mineral-grade kaolin in the UK; it had increased its activities in performance minerals and had developed a Puraflo range of grades which competed with the parties' performance-mineral kaolin, and was supplied to the UK customers directly or via Minerals Marketing, a distributor.
 - (b) The main parties claimed that there were customers which had threatened to switch or had switched to Sibelco ([REDACTED] and [REDACTED], respectively; [REDACTED] switched from [REDACTED] to Sibelco over five years ago). We note, however, that [REDACTED] did not support the claim that it had threatened to switch to Sibelco.
 - (c) Imerys claimed that Sibelco had reserves of sufficient quality and quantity at its Lee Moor pit in Devon from which to produce CPM kaolin; Imerys told us that it [REDACTED] prior to 2008.
 - (d) The main parties submitted that Sibelco had in the past supplied large volumes of performance-mineral grades to UK and overseas customers, and that it currently supplied to customers manufacturing a wide range of end-products, including rubbers, adhesives and plasterboard. The main parties were of the view that Sibelco produced kaolin grades that were suitable for matt and semi-gloss paints.

- (e) The main parties claimed that Sibelco already had commercial relationships with a number of customers in the performance-minerals market, including [REDACTED], and that therefore Sibelco was well placed to expand its performance-minerals business in the UK.
- (f) The main parties claimed that Sibelco was a major competitor for specialty products and minerals as it had established a dedicated specialty business division, Sibelco Specialty Minerals Europe, with a dedicated technical sales team and laboratory; we understand this is based in the Netherlands.
- (g) The main parties indicated that Sibelco had recently acquired Viaton, a company specializing in mineral processing for chemicals and coatings in the UK, leaving Sibelco well placed to supply a range of minerals to performance-mineral customers of the main parties.
26. Sibelco told us that it supplied kaolin to performance-mineral applications such as rubbers and adhesives. It said that colour quality of its kaolin meant that it was not suitable for use in paint or in other applications where colour was important, but where colour was not important, there were numerous applications for the material. It said that Imerys and Goonvean could supply all the same applications that Sibelco could.
27. Sibelco told us that its Puraflo S and CC31 were substitutable grades for the CPM grades supplied by the main parties. Our estimates show that the average price for Puraflo S in the UK was £[REDACTED] per tonne in 2012 and the average price of the CC31 grade was £[REDACTED] per tonne. These prices are comparable to those of the higher-quality CPM grades of the main parties. Sibelco said that it could not produce kaolin grades that would be substitutable [REDACTED]; it would need to invest in additional processing facilities to be able to produce similar high-quality grades.

Overview of the main party customers

Imerys's customers

28. Table 15 summarizes Imerys's performance-mineral kaolin customer numbers and size, shown separately for CPM and PPM kaolin grades.

TABLE 15 **Imerys's performance-mineral kaolin customer distribution, 2012**

<i>Application</i>	<i>No of customers with sales >100 tonnes</i>	<i>% revenue top 1 customer</i>	<i>% revenue top 3 customers</i>	<i>% revenue top 10 customers</i>	<i>Total sales £</i>
CPM	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
PPM	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys's sales data.

Note: Customers are ranked by 2012 UK sales revenue.

29. Imerys had [REDACTED] customers in the CPM applications (of which [REDACTED] purchased more than 100 tonnes in 2012), and [REDACTED] customers in PPM applications (of which [REDACTED] purchased more than 100 tonnes in 2012). The concentration of Imerys's customers is high as the top customers seem to account for a large part of the revenue generated. The top 10 customers account for [REDACTED] per cent of total revenue in the CPM application and for [REDACTED] per cent of total revenue in the PPM application. The top 3 customers account for [REDACTED] per cent of sales revenue in the CPM application and [REDACTED] per cent of sales revenue in the PPM application.

30. Table 16 shows Imerys top 5 customers for kaolin sold to performance-mineral applications. We show Imerys's PPM and CPM customers separately. The largest five Imerys PPM customers accounted for [X] per cent of sales; the largest five Imerys CPM customers accounted for [X] per cent of sales.

TABLE 16 Imerys's largest UK customers for performance-mineral kaolin, 2012

Customer name	Application	Sales tonnes	Sales £	Average price £/tonne	Sales within application %
PPM					
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]
CPM					
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of Imerys data.

Note: Share within application is calculated based on sales revenue.

Goonvean's customers

31. Table 17 summarizes Goonvean's performance-mineral customer numbers and size. Goonvean supplied around [X] customers in the performance-mineral applications in 2012 ([X] of which purchased more than 100 tonnes of kaolin) while there have been more customers in previous years. The top 10 and top 3 customers accounted for, respectively, [X] and [X] per cent of total revenue in the performance-mineral application.

TABLE 17 Goonvean's customer distribution, 2012

Application	No of customers with sales >100 tonnes	% revenue top 1 customer	% revenue top 3 customers	% revenue top 10 customers	Total sales £
Performance minerals	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of Goonvean's sales data.

Note: Customers are ranked by 2012 UK sales revenue.

32. Table 18 shows Goonvean's top 5 customers for kaolin sold to performance-mineral applications. The largest five Goonvean customers accounted for [X] per cent of its sales in 2012.

TABLE 18 Goonvean's largest UK customers for performance-mineral kaolin grades, 2012

Customer name	Application	Sales tonnes	Sales £	Average price £/tonne	Sales within application %
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of Goonvean data.

Note: Share within application is calculated based on sales revenue.

The main parties' customers

33. In the market for performance minerals—ie including also Imerys's 'premium' grades—[X] accounted for [X] per cent of the main parties' combined revenue, [X] accounted for [X] per cent, [X] accounted for [X] per cent and [X] accounted for [X] per cent. Thus the largest four customers accounted for [X] per cent of the combined Imerys and Goonvean revenue for kaolin sold to performance-mineral applications. The main distributors—[X], [X] and [X]—accounted for [X] per cent. Medium and smaller customers had a combined share of [X] per cent of the main parties' revenue in performance-mineral applications.
34. Within the 'commodity' performance-mineral segment of the market, [X] accounted for [X] per cent of Imerys's and Goovean's revenue within CPM, [X] accounted for [X] per cent, [X] accounted for [X] per cent and [X] accounted for [X] per cent. Distributors [X], [X] and [X] accounted for, respectively, [X], [X] and [X] per cent of the main party revenues in CPM. The rest of the customers accounted for around [X] per cent of total revenue.

Customer switching

Cost of switching

35. In this section, we summarize the customers' and main parties' views on the cost of switching in performance-mineral applications:
- (a) [X] told us that the trialling process of an alternative material could take several months. Its estimate of the cost of this exercise was £10,000.
 - (b) Thor said that it had trialled various grades of kaolin, where the testing and the approval of the grades took place at the laboratory level. It noted that the cost of trialling was not significant and the length of laboratory testing was up to one week.
 - (c) Akzo Nobel noted that the cost was significant in getting a kaolin alternative approved for use in replacing another one by doing R&D testing. It said that the process of switching to an alternative kaolin grade required every formulation within a manufacturing facility that used the material to be switched to the alternative kaolin. Akzo Nobel noted that on a large factory scale, this may mean the movement of many thousands of recipes, which took approximately [X].
 - (d) Armstrong said that the cost would depend on whether there were any quality issues with the trial material.
 - (e) Crown Paints told us that the lab testing could take up to 12 weeks followed by production trials which together with logistics would take up to another two months. It said that [X].
36. The main parties said that their performance-mineral customers were sophisticated companies which could easily switch to alternative kaolin producers or reformulate to use alternative minerals if prices for kaolin were to increase above the competitive level. For example, they suggested that sophisticated customers such as [X] and [X] would be able to reformulate their products using their own technicians at a limited cost in proportion to their operations.
37. The main parties said that customers had extensive experience in reducing costs by altering their production formulations and had substituted away from kaolin to

alternative minerals. The main parties told us that the end-products produced with performance-mineral-grade kaolin, such as paints, were produced throughout the world using alternative raw materials, such as mica, dolomite, talc, GCC, ball clays, bentonite and cellulose thickeners.

38. The main parties told us that reformulation was a routine process for customers. They told us that the customer would undertake laboratory testing for seven to ten days, manufacturing its products with the alternative mineral. The main parties said that at that stage, the customer would know whether the alternative kaolin grade was suitable. For example, they said that when manufacturing paint, the customer would store the product in order to check its shelf life. The costs and time incurred in verifying that there was no adverse impact on the final product would be the same irrespective of whether the customer switched from Imerys to Goonvean or from Imerys to another supplier such as [REDACTED] or AKW.

Evidence on switching

39. Our analysis of customer switching suggested that of the [REDACTED] Imerys losses between 2008 and 2012, [REDACTED] involved sales to performance-mineral applications, and all of these were to Goonvean. Similarly, of the [REDACTED] Goonvean wins or losses in the last five years, [REDACTED] involved sales to performance-mineral applications, and all of these were switches to/from Imerys. Further details of our analysis of switching in performance-mineral applications are set out below.

Goonvean

40. Table 19 shows the list of names of the customers Goonvean won and lost in the period 2008 to 2012 in relation to performance-mineral applications. In total, there are [REDACTED] entries, of which [REDACTED] entries specify won sales from Imerys, which were made over the period June 2009 to March 2010. [REDACTED] entry notes lost sales to Imerys ([REDACTED]).

TABLE 19 **Goonvean customer switching in CPM in the last five years**

<i>Date of switching</i>	<i>Customer name</i>	<i>Application</i>	<i>Win or loss</i>	<i>Name of competitor from or to whom sales were won or lost</i>	<i>Goonvean grade supplied/quoted</i>	<i>Competitor's grade</i>
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Goonvean.

Note: PM = performance-mineral application, LS = life-science application.

41. Table 20 presents details of Goonvean's sales volumes and sales revenue won and lost based on the reported customer switching details in Table 19. The reported data in Table 20 shows the volumes and revenues for the year following a win and the reported volumes and revenues lost for the year preceding the loss. For example, [REDACTED]; thus the reported volumes and revenue in the table are for year 2010 for this customer. Similarly, [REDACTED], thus the reported volumes and revenues are for year 2011 for this customer.
42. Table 20 shows that, for the [REDACTED] Goonvean lost to Imerys in 2012, the volumes lost were under [REDACTED] tonnes. The lost sales revenue from [REDACTED] represents [REDACTED] per cent of Goonvean's total sales revenues in 2011. From the [REDACTED] wins Goonvean reported over the period 2008 to 2010 in performance minerals, the total volumes won ranged from [REDACTED] to [REDACTED] tonnes. These volumes represented around [REDACTED] to [REDACTED] per cent of Goonvean's sales volumes or around [REDACTED] to [REDACTED] per cent of sales revenue. [REDACTED]

accounted for the largest win in this period, with [REDACTED] per cent of revenues won relative to Goonvean's total kaolin revenues.

TABLE 20 Goonvean volumes and revenues won and lost in the last five years

Year pre-loss or post-win	Customer name	Application	Win or loss	Competitor won/lost	Volume won/lost Relative to total tonnes	Revenue won/lost Relative to total £
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Goonvean.

Note: For customer [REDACTED] there is no data available for 2009. The volume and revenue figures are the average values from years 2010 to 2012. The relative to total values for [REDACTED] use the total volume and revenue from year 2009. Applications key: PM = performance minerals; LS = life sciences.

Imerys

43. Imerys's switching data for CPM (and PPM) applications is shown in Table 21. Imerys noted that all these wins/losses involved the supply of kaolin products in the UK with the exception of:
- (a) [REDACTED], which involved pan-European supplies of kaolin; and
 - (b) [REDACTED], which involved the customer increasing its sourcing of minerals from Imerys. [REDACTED]

TABLE 21 Imerys customer switching in the last five years

Date of switching	Customer name	Application	Win or loss	Name of competitor from or to whom sales were won or lost	Imerys grade supplied/quoted	Competitor's grade
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Imerys.

44. Table 22 presents details of Imerys's sales volumes and sales revenue won and lost based on the reported customer switching details in Table 21. The reported data in Table 22 shows the volumes and revenues for the year following a win and the reported volumes and revenues lost for the years preceding the loss. We only have sales data from Imerys for years 2008 to 2012. Thus we are unable to report the volumes won if the switching took place in 2012 or 2013 (eg [REDACTED]); [REDACTED] switched in 2008, and we used Imerys sales to [REDACTED] in 2008 to estimate the volumes lost.
45. We see that the largest losses for Imerys of its CPM customers were loss of [REDACTED] to Goonvean, representing around [REDACTED] per cent of Imerys's total kaolin sales volumes. Imerys has lost relatively large volumes of PPM kaolin sales ([REDACTED]) to [REDACTED], and we were told that losses to this producer [REDACTED].

TABLE 22 Imerys volumes and revenues won and lost in the last five years

Year pre-loss or post-win	Customer name	Application	Win or loss	Competitor lost to/won from	Volume won/lost Relative to total tonnes	Revenue won/lost Relative to total £
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: Imerys data, CC calculations.

Note: N/A = not available.

46. With regard to switching between PPM and CPM grades, we have seen evidence of at least one instance of switching from Imerys's Supreme to Goonvean's Opal Gamma in the last five years. Goonvean said that Opal Gamma [REDACTED], whereas Imerys said that [REDACTED]; thus the main parties believed that the Supreme and Opal Gamma were not used to produce the same end-product [REDACTED].
47. In relation to CPM kaolin grades, the main parties claimed that some of their customers had previously threatened to switch to Sibelco. We note that evidence from customers did not support this claim.
48. The main parties told us that [REDACTED] as it was a coarser grade, which resulted in lower oil absorption, thus saving costs. Opal Epsilon was also characterized by consistent brightness, which resulted in a uniform finished product. Furthermore, [REDACTED]. Goonvean considered that [REDACTED] could easily switch to Sibelco (Puraflo WB), Soka (Sokalite) or AKW kaolin.
49. The main parties provided a number of examples of non-UK customers switching between their kaolin grades and kaolin grades produced by other suppliers as supporting evidence to show that customer switching in performance mineral applications was possible and happening, and that customers had alternative grades available from suppliers other than Imerys and Goonvean.
50. [REDACTED]

Speswhite

51. As noted in paragraph 6, we found it useful to include Speswhite under the heading of 'CPM' kaolin in our analysis, even though Imerys told us that it classified and marketed Speswhite as a 'premium performance mineral' kaolin grade.
52. The [REDACTED] Speswhite customer in the UK is Crown Paints, which accounted for [REDACTED] per cent of sales volumes ([REDACTED] tonnes) and [REDACTED] per cent of revenues of Speswhite in the UK in 2012. Crown Paints takes Speswhite principally in bulk, and paid an average price of £[REDACTED] per tonne in 2012 (it also took [REDACTED] tonnes in IBCs and bags, paying a higher price per tonne). [REDACTED] is the [REDACTED] customer, taking [REDACTED] tonnes of Speswhite in bulk in 2012 at an average price of £[REDACTED] per tonne. The rest of the customers and distributors of Speswhite purchase it in bags (or IBCs), at an average price of £[REDACTED] per tonne ([REDACTED] tonnes in 2012 in total).
53. Imerys submitted the following in relation to Speswhite:
 - (a) Speswhite's specification and attributes indicated that it was a PPM grade: the brightness, fineness and viscosity of Speswhite were superior to the parties' CPM products. Speswhite was used in those paints, sealants and adhesives where a higher-quality grade was required as it was brighter and had finer particles and supported the creation of more viscous paints and sealants; it was also used in high-end matt paints where a CPM grade would not be sufficient.
 - (b) The CC's analysis (Appendix J, Table 15) showed that it was viable for bagged Speswhite customers to source alternative kaolin grades from international producers.
 - (c) [REDACTED] was able to negotiate a [REDACTED] lower price than Imerys's other customers because it purchased significant volumes of Speswhite and [REDACTED] and because it principally purchased in bulk form. Thus the average price of Speswhite (£[REDACTED] per tonne) was skewed by the [REDACTED] lower prices of [REDACTED].

(d) [REDACTED]

(e) Goonvean had discussions with [REDACTED] in 2010 in relation to the possibility of supplying Opal Alpha to its UK facilities. Goonvean informed [REDACTED] that it was unable to supply the necessary volumes.

(f) [REDACTED] could import competing kaolin grades, and international producers were likely to be willing to export a competing kaolin grade to Speswhite at low ex-works prices in order to win the [REDACTED] sales to [REDACTED] as well.⁶ The main parties identified a number of hydrous and calcined kaolin grades produced by overseas suppliers ([REDACTED]) that competed with Speswhite and [REDACTED], respectively.

54. As described below, Crown Paints told us that it regarded Goonvean's Opal Alpha as an alternative to Imerys's Speswhite. Richard Baker Harrison, a distributor, told us that Imerys's Speswhite grade was equivalent to Goonvean's Opal Alpha grade.

55. The main parties submitted an exchange of emails between Goonvean employees in March 2010 regarding [REDACTED]. This email exchange shows that [REDACTED] had approached Goonvean to supply Opal Alpha, and that Goonvean decided it could not supply [REDACTED] because it required [REDACTED].

56. The email exchange also highlights that Goonvean wanted to find [REDACTED], such that it could supply [REDACTED] in due course: [REDACTED].

57. This Goonvean email exchange corroborates what [REDACTED] had told us in relation to leveraging Goonvean in its price negotiations with Imerys (see paragraph 63 in this appendix): [REDACTED].

58. As detailed below, Crown Paints told us that it had tested a kaolin grade from Sibelco that would be substitutable with Imerys's Speswhite, and found it suitable. Crown Paints said that this Sibelco kaolin was not commercially available.

59. Sibelco explained that [REDACTED].

Evidence on the main customers

60. Below we provide a customer-by-customer overview for the main party customers in performance-mineral applications.

Crown Paints

61. Crown Paints is a major decorative paint manufacturer in the North of England. It manufactures in two sites, Darwen and Hull. It supplies mainly to the UK and Republic of Ireland markets and a small amount is exported. Crown Paints told us that it was part of a group and that the parent company, Hempel, was a large Danish business that specialized in marine protective and industrial coatings. Hempel acquired Crown Paints in June 2011 from a financial owner (Endless LLP) following its divestment from Akzo Nobel.

⁶ We note, however, that no evidence was submitted to back this assertion.

Sourcing of kaolin

62. Crown Paints purchased the grade Speswhite from Imerys on agreements for kaolin that lasted one to two years. It said that negotiations were based on raw material costs, mainly energy and logistics, while inflation and market supply, demand and competition would also affect the price. It told us that deliveries were in bulk and took place every two to three working days and that it did not source other materials from Imerys. Crown Paints concluded a three-year supply agreement with Imerys in 2010. It concluded another three-year agreement in 2013.

Alternatives and switching

Imerys/Goonvean

63. Crown Paints told us that in 2010 it identified an alternative to Speswhite from Goonvean (Opal Alpha) and that this alternative gave it leverage in its negotiations with Imerys. As detailed in paragraphs 55 to 57 above, internal documents from Goonvean suggested that Crown Paints had sought quotes for Opal Alpha in 2010 in the course of negotiations with Imerys.

Sibelco

64. Crown Paints told us that Sibelco could be an alternative supplier for kaolin but this would require a significant technical evaluation. It told us that it had recently undertaken some initial testing on Sibelco's grades which suggested that they may be suitable but had not to date discussed commercial terms. Crown Paints noted that the material from Sibelco was not commercially available presently. [✂]

65. [✂]

Imported kaolin

66. Crown Paints told us that it was too expensive to import kaolin as importers could not compete on price. Transport costs would make imported kaolin too expensive. However, it identified Sachtleben (Germany) as an alternative supplier of kaolin.

Buyer power

67. The main parties submitted that its customers in the performance-mineral applications had countervailing buyer power and/or could readily reformulate.
68. Crown Paints told us that in 2010 (when it trialled Goonvean's Opal Alpha), switching to Goonvean was used as leverage in negotiations with Imerys. [✂]
69. Crown Paints said that it had no leverage by being part of a larger group; while Hempel purchased small amounts of different grades from Imerys, these were not considered in the negotiations because it was Crown Paints that purchased the largest amounts. It noted that Imerys was an aggressive negotiator and imposed price increases on a 'take it or leave it' basis. It told us that in 2013 negotiations Imerys had imposed a 6 per cent increase in price for Speswhite.

Akzo Nobel

Sourcing of kaolin

70. In the UK, Akzo Nobel [redacted] buys from Imerys. Akzo Nobel's largest purchases are of the grade [redacted]. Akzo Nobel also purchases from [redacted] and [redacted]. [redacted] kaolin is only for marine protective coatings. Akzo Nobel's detailed purchases for 2012 are shown in Table 23.

TABLE 23 Kaolin grades purchased by Akzo Nobel, 2012

Supplier	Grade	Form	Application	2012 volumes tonnes	Characteristics of this grade
Imerys	[redacted]	Bulk	Paint	[redacted]	Hydrous kaolin
Imerys	[redacted]	Bulk	Paint	[redacted]	Hydrous kaolin
Imerys	[redacted]	Bulk	Paint	[redacted]	Hydrous kaolin
Imerys	[redacted]	Bulk	Paint	[redacted]	Calcined kaolin
Imerys	[redacted]	Bulk	Paint	[redacted]	Hydrous kaolin
[redacted]	[redacted]	Bulk	Paint	[redacted]	Calcined kaolin
[redacted]	[redacted]	Bulk	Paint	[redacted]	Hydrous kaolin
[redacted]	[redacted]	Bulk	Paint	[redacted]	Calcined kaolin
[redacted]	[redacted]	Bulk	Paint	[redacted]	Hydrous kaolin
[redacted]	[redacted]	Bulk	Paint	[redacted]	Hydrous kaolin

Source: Akzo Nobel, Imerys.

Note: Data on 2012 volumes of purchases from Imerys is taken from Imerys's sales data. Data on 2012 volumes on purchases from [redacted], [redacted] and [redacted] is from Akzo Nobel.

71. Akzo Nobel told us that kaolin products were used as an ingredient in the formulation for the production of decorative and industrial paints. It said that more volume of kaolin was used in decorative coatings formulations compared with other industrial coatings formulations. The percentage of kaolin used ranged by product and could exceptionally go up to [redacted] per cent. Akzo Nobel told us that it [redacted] kaolin in the marine coatings.
72. Akzo Nobel said that it negotiated prices with Imerys usually every year and as of December 2012 it had [redacted] with Imerys. It received kaolin in powder form in Slough and in slurry form in Stowmarket. [redacted].

Alternatives and switching

Imerys/Goonvean

73. Akzo Nobel told us that [redacted]. Akzo Nobel said that [redacted].
74. Akzo Nobel told us that [redacted].

Sibelco

75. With regard to Sibelco, Akzo Nobel said that [redacted].

Imported kaolin

76. Akzo Nobel told us that it had trialled [redacted] products as alternatives to Imerys. It said that importing kaolin in slurry form was very expensive [redacted].

Buyer power

77. The main parties told us with respect to Akzo Nobel that it negotiated with Imerys for the supply of [REDACTED] with its UK CPM kaolin purchases accounting for only [REDACTED] per cent of total revenue and could reduce sales of these minerals if kaolin prices were to increase. We note that Akzo Nobel's UK purchase of [REDACTED] accounted for [REDACTED] per cent of Imerys's total revenue from this customer globally.
78. Akzo Nobel negotiated with Imerys [REDACTED]. Akzo Nobel told us that [REDACTED].

[REDACTED]

Sourcing of kaolin

79. [REDACTED] buys the grades Polwhite B, [REDACTED] and Speswhite from Imerys. The grade purchased in largest volumes is [REDACTED]. [REDACTED] told us that in its grab adhesive product kaolin represented approximately a quarter of that product by weight. [REDACTED] The kaolin grade that was used for that product was Imerys's Polwhite B.
80. [REDACTED] told us that it did not have a formal contract for the supply of kaolin with Imerys. It said that Imerys increased its prices annually and that it had tried to negotiate price reductions and price stability with little success. [REDACTED] received kaolin as dry powder in 25-kilo sacks and it was looking at an investment that would enable it to take the Polwhite powder in bulk tanker.

Alternatives and switching

Imerys/Goonvean

81. [REDACTED] told us that it viewed Goonvean as an alternative to Imerys. It had trialled Goonvean's products but had stopped the process because of the merger. It considered that the evaluation of Goonvean's kaolin and agreement of commercial terms would provide an alternative to Imerys's product and introduce local competition.
82. Imerys's internal documents [REDACTED].
83. [REDACTED]
84. [REDACTED]
85. [REDACTED]
86. [REDACTED]

Sibelco

87. [REDACTED] told us that it had never considered Sibelco as an alternative supplier.

Imported kaolin

88. [REDACTED] said that it had not considered imported kaolin because of transport costs, and noted that transport costs relative to the value of the product were significant. The security of supply would also be an issue, and the current quantities of kaolin used and the longer delivery lead times would mean that it would need to hold stock of

imported kaolin, which would have an adverse impact on the utilization of its warehouse areas.

Buyer power

89. The main parties told us that [REDACTED].
90. [REDACTED] told us that negotiations on kaolin were on a countrywide level only. Although it might share information on its activities with parts of the company in other countries, particularly in Europe, the supply of kaolin in the UK was negotiated locally.
91. We reviewed internal documents on the recent negotiations between [REDACTED].

Armstrong

Sourcing of kaolin

92. Armstrong currently purchases Opal Gamma and Crystal Sheen from Goonvean. It uses kaolin to produce paints for its suspended ceilings, and purchases kaolin from Goonvean for its three European plants, one of which is in the UK. Armstrong told us that it asked its approved suppliers of kaolin (Imerys and Goonvean) to supply quotations based on its estimated annual tonnage. Armstrong negotiated prices, discounts and payment terms for all of the three plants in Europe. Its deliveries were weekly in accordance with a schedule provided to the supplier and the UK plant received kaolin in bulk tanker. Armstrong did not multisource kaolin with other minerals and multi-sourcing was not critical to it.

Alternatives and switching

Imerys/Goonvean

93. Armstrong switched the kaolin supplier for all its three European plants in 2009 from Imerys to Goonvean. It had carried out trials to approve Goonvean's kaolin as a competitor to Imerys as part of its strategy to have multiple suppliers for its main raw materials. It said that Imerys was an approved supplier to both the UK and non-UK plants.
94. We reviewed internal documents on negotiations [REDACTED].

Sibelco

95. Armstrong told us that Sibelco had previously supplied Armstrong's UK plant but that Sibelco had a limited amount of kaolin available and could not meet the demand for all three of its European plants (this was around 12 years ago though). Armstrong said that in the past Sibelco did not have the whole range of kaolin grades it required and that it had grades only suitable for paints of backs of its products.

Imported kaolin

96. Armstrong told us that it had looked into switching to non-UK suppliers but that this had been shown not to be cost effective.

Buyer power

97. The main parties told us that Armstrong purchased kaolin [REDACTED]. The main parties claimed that [REDACTED].
98. Armstrong told us that as it purchased on a Europe-wide basis it received one consistent ex works price. Its annual kaolin purchases across the three European plants were in the region of 10,000 to 12,000 tonnes but it had found that it was not a sufficiently large quantity to give it any buyer power in negotiations with Imerys. It moved away from Imerys to Goonvean predominantly due to aggressive price increases imposed by Imerys.

Other customers

Thor Specialities

99. Thor Specialities (Thor) is active in the production and supply of a wide range of biocides, flame retardants and personal care ingredients. Thor purchases kaolin from Goonvean. We note that [REDACTED].
100. With regard to imported kaolin, Thor told us that it had booked US material in the past due to lower prices. Because of a quality working relationship with Goonvean it had stayed solid in its partnership. It told us that Cornish kaolin did not have substantial differences for its applications and that today no US material was being offered (due to the exchange rate). Thor had not been actively looking around for non-UK suppliers.

EOC

Sourcing of kaolin

101. EOC UK is a member of the EOC Group. It has bought kaolin from Goonvean since about 2009 mainly due to price reasons and to replace some volume from Imerys. EOC told us that pre-merger Goonvean was the only local competitor to Imerys especially in the UK in the supply of kaolin.

Buyer power

102. The main parties told us that [REDACTED].
103. We reviewed internal documents on negotiations between [REDACTED].

Scapa

Alternatives and switching

104. Imerys and Goonvean internal documents [REDACTED].

Distributors

Richard Baker Harrison

Sourcing of kaolin

105. RBH purchases from Imerys and Goonvean and has acted as distributor for both companies for many years. Its purchases for 2012 are shown in Table 24.

TABLE 24 Kaolin grades purchased by RBH, 2012

Supplier	Grade	Form	2012 volumes (tonnes)
Imerys	[X]	[X]	[X]
Imerys	[X]	[X]	[X]
Imerys	[X]	[X]	[X]
Imerys	[X]	[X]	[X]
Imerys	[X]	[X]	[X]
Imerys	[X]	[X]	[X]
Imerys	[X]	[X]	[X]
Imerys	[X]	[X]	[X]
Imerys	[X]	[X]	[X]
Imerys	[X]	[X]	[X]
Goonvean	[X]	[X]	[X]
Goonvean	[X]	[X]	[X]
Goonvean	[X]	[X]	[X]
Goonvean	[X]	[X]	[X]

Source: Imerys, Goonvean.

106. RBH said that it purchased kaolin directly from Imerys and Goonvean based on current list prices, normally advised at the beginning of each year. It said that purchase prices were based on list prices quoted by the suppliers and that purchases were ad hoc depending on its customers' requirements. RBH sources multiple materials from Imerys: besides kaolin, it also buys small quantities of Pilcarb, Mica and Dolomite.

Alternatives and switching

- *Imerys/Goonvean*

107. RBH told us that Imerys's Polwhite B grade was equivalent to Goonvean's Opal Beta grade, Imerys's Polwhite E grade was equivalent to Goonvean's Opal Gamma grade and Imerys's Speswhite grade was equivalent to Goonvean's Opal Alpha grade.
108. RBH told us that Goonvean's prices were generally cheaper and that in the last couple of years, around two or three small customers had changed from Imerys to Goonvean because of the price. It said that customers did not necessarily want to change because it was an expensive exercise and that if there had been a move of customers in its business, it was where customers had gone from an Imerys grade to a Goonvean grade.
109. RBH said that if Goonvean were to survive as a thriving, independent, financially viable company, it would provide some competition in the marketplace. RBH's main concern from the merger was the future production and supply of pharmaceutical-grade kaolins. It said that Goonvean produced its flagship grades BPLK and BPHK from deposits in Cornwall and was the only UK manufacturer of pharmaceutical-grade kaolin. Imerys did not produce similar grades in the UK but these were produced and imported from Australia. RBH told us that BPLK and BPHK were important raw materials for the pharmaceutical industry and a closure of UK

production could have a detrimental effect on UK manufacturing. RBH noted that many years ago English China Clay, Imerys's precursor, used to produce pharmaceutical-grade kaolin in Cornwall, and that now Goonvean remained the only local producer of these grades.

- *Sibelco*

110. RBH told us that Sibelco's products were not directly competing against the Imerys and Goonvean range of products; it produced hydrous kaolin mainly for paper and ceramics.

- *Imported kaolin*

111. RBH said that imported hydrous kaolin was not currently competitive on price but that there was strong competition from imported products for the higher-value calcined kaolin.

[REDACTED]

112. [REDACTED] purchases kaolin grades for performance-mineral applications from Goonvean and abroad. [REDACTED] told us that prices were generally set by the kaolin manufacturers.

Alternatives and switching

- *Imerys/Goonvean*

113. [REDACTED] told us that as a result of the merger, over the last four months many of its customers had switched to purchasing kaolin directly from Imerys. Customers were switching from Goonvean's kaolin to Imerys's kaolin because they would eventually have to deal with Imerys for its kaolin purchases. [REDACTED] told us that with Imerys and Goonvean as two separate companies, Goonvean was able to compete with Imerys. It said that there was little innovation in the industry, but with the sale of Goonvean's kaolin business, there was the potential for the loss of products provided by Goonvean.

- *Sibelco*

114. [REDACTED] said that there was competition from Sibelco as alternative to kaolin produced by Imerys and Goonvean, and that Sibelco could be a potential partner.

- *Imported kaolin*

115. [REDACTED] told us that European kaolin imports (eg from the Czech Republic) could be potential alternatives to the Cornish kaolin produced by Imerys and Goonvean. However, [REDACTED] noted that this would depend upon its customers being able to trial new kaolin products to change their recipe formulations for end-use applications, the availability of funds to trial new products and the ability to incorporate the distribution costs for the supply of kaolin from Europe.

WhitChem

116. WhitChem is an Imerys distributor and purchases all its kaolin requirements from Imerys.

117. WhitChem told us that if Imerys increased prices, it would increase its prices.
118. It said that it distributed Imerys's performance-mineral-grade kaolin, and imported Imerys's pharmacological-grade kaolin Light Kaolin BP from Australia. It noted that lead times of importing from Australia (three months) may affect the competitiveness of imported kaolin.

International trade, imports and transport costs for kaolin

Introduction

1. This appendix sets out supporting evidence on kaolin imports, international trade, and transport costs.
2. This appendix is structured as follows:
 - (a) an overview of UK kaolin imports and exports, and market share of imports;
 - (b) a review of main and third party views on importing kaolin;
 - (c) our analysis of the main parties' export sales;
 - (d) analysis of transport costs; and
 - (e) estimates of delivered prices for imported kaolin.

Overview of UK kaolin imports and exports

UK kaolin imports and exports by the main parties

3. World production of kaolin is estimated at around 34 million tonnes in 2011. European countries produced around 15 million tonnes of kaolin in 2011 (41 per cent of total). The largest producers of kaolin are Germany, the Czech Republic, the UK, Bulgaria and Turkey in Europe, and Uzbekistan, the USA, Brazil and China in the rest of the world.¹
4. Table 1 shows Imerys's UK production, imports and exports in 2012 by application. Its sales of UK production of hydrous kaolin amounted to [redacted] kt of kaolin, with around [redacted] per cent) being paper-filler kaolin grades. It also produced a further [redacted] kt of hydrous kaolin and was sold to Sibelco (primarily) and Goonvean (small quantities), and a further [redacted] kt of calcined kaolin; thus its total kaolin production in the UK was [redacted] kt in 2012. Imerys imports paper-coating kaolin from Brazil (around [redacted] kt in 2012), and small volumes of performance-mineral-grade kaolin from the USA and France and tableware kaolin from France, Thailand and New Zealand. On average, [redacted] per cent of Imerys's UK-produced kaolin was exported in 2012, with the share of exports ranging from [redacted] per cent for PPM grades ([redacted] per cent for CPM grades) to [redacted] per cent for paper-filler grades.

¹ Based on Research and Consulting Ltd (2012), *Kaolin: Market Review*, Table 2 and country tables, and on British Geological Society (2011), *United Kingdom Minerals Yearbook 2011*, p29.

TABLE 1 Imerys's UK kaolin production, imports and exports, 2012

Application	Total sales of UK production		UK sales of UK production	Imports	Exports	Export share
	kt	%				
Sanitaryware	[X]	[X]	[X]	[X]	[X]	[X]
Tableware	[X]	[X]	[X]	[X]	[X]	[X]
Paper (filler)	[X]	[X]	[X]	[X]	[X]	[X]
Paper (coating)	[X]	[X]	[X]	[X]	[X]	[X]
PM (CPM)	[X]	[X]	[X]	[X]	[X]	[X]
PM (PPM)	[X]	[X]	[X]	[X]	[X]	[X]
Boiler additives	[X]	[X]	[X]	[X]	[X]	[X]
Engineering ceramics	[X]	[X]	[X]	[X]	[X]	[X]
Refractories	[X]	[X]	[X]	[X]	[X]	[X]
Reinforced fibreglass	[X]	[X]	[X]	[X]	[X]	[X]
Tiles	[X]	[X]	[X]	[X]	[X]	[X]
Other	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of Imerys's data.

Note: The total UK sales is equal to UK sales of UK-produced material plus imports. Data does not include imports of life-science grades, which have been small (between [X] tonnes annually in the last five years). Export share is calculated relative to the UK production. The total includes sales of hydrous kaolin to all applications listed above, and includes internal (transfer) sales, but excludes sales to Sibelco and Goonvean, which amounted to [X] kt in 2012. Total sales of UK production is a proxy for total UK production; total production is higher than total sales due to losses in processing.

5. Table 2 shows Goonvean's UK production, imports and exports in 2012 by application. Its total UK production amounted to [X] kt of kaolin, with paper-filler grades accounting for around 39 per cent of that. Goonvean imports tableware kaolin from Germany [X] (therefore Goonvean's UK production and UK sales figures include imported kaolin). On average, 90 per cent of Goonvean's UK-produced kaolin was exported in 2012, with the share of exports ranging from 65 per cent for tableware grades and 66 per cent for life-science grades to 97 per cent for paper-filler and sanitaryware grades.

TABLE 2 Goonvean's UK kaolin production, imports and exports, 2012

Application	Total sales of UK production		UK sales	Imports	Exports	Export share
	kt	%				
Sanitaryware	[X]	[X]	[X]	[X]	[X]	[X]
Tableware	[X]	[X]	[X]	[X]	[X]	[X]
Paper filler	[X]	[X]	[X]	[X]	[X]	[X]
Performance minerals	[X]	[X]	[X]	[X]	[X]	[X]
Life sciences	[X]	[X]	[X]	[X]	[X]	[X]
Refractories	[X]	[X]	[X]	[X]	[X]	[X]
Glazes	[X]	[X]	[X]	[X]	[X]	[X]
Other	[X]	[X]	[X]	[X]	[X]	[X]
Total	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis of Goonvean data.

Note: The total UK sales and total UK production include imported material, as Goonvean blends the imported material to produce some of its tableware grades. The total includes sales of hydrous kaolin to all the applications listed above. Total sales of UK production is a proxy for total UK production (except in tableware, where the imported and blended kaolin is included). Total production is higher than total sales due to losses in processing.

Overview of non-UK kaolin producers

6. There are a number of kaolin producers in Europe and beyond, some of which import small volumes of kaolin into the UK. Table 3 lists the main kaolin producers outside the UK, and indicates the types of application that their kaolin grades can be used for. It indicates whether kaolin grades of these producers are currently supplied in the

UK, where known. We have no information on whether these suppliers can provide a similar range of grades within each application as Imerys and Goonvean.

TABLE 3 Non-UK suppliers of kaolin by application

Supplier	Location	Applications*						Presently supplies kaolin to the UK?	Comments
		Paper filler	Paper coating	Sanitary-ware	Tableware	Performance minerals	Life sciences		
AKW	Germany, Poland, Ukraine	✓		✓	✓	✓	✓‡	Tableware grades [X]	[X]
Thiele	USA	✓	✓			✓		PM grade distributed by [X]	
BASF	USA	✓	✓			✓		PM (calcined) grades distributed by [X], and PM grade direct import by [X]	
Omya Soka	USA, France, Ukraine	✓	✓			✓		Kaolin for use in tiles	[X] purchases Omya's GCC Soka said it could compete in sanitaryware, tiles, refractory, and mineral fillers
Proscoc	Ukraine	✓		✓	✓				
Mota Mineral Cuenca	Portugal, Spain			✓	✓				
ECESA	Spain	✓	✓	✓	✓	✓			
Vimianzo	Spain	✓		✓	✓	✓			
Lasselsberger	Czech	✓	✓	✓	✓	✓	✓		
Kamig	Austria	✓		✓	✓				
KaMin	USA	✓	✓			✓	✓§	PM grades distributed by [X]	
Sedlecky Kaolin	Czech	✓		✓	✓	✓	✓¶		
China Mineral Processing	China							PM grade distributed by [X]	
Longyan	China			✓	✓				
Dorfner	Germany	✓	✓	✓	✓	✓			
Hoffman Mineral	Germany					✓		PM grade distributed by [X]	
Stephan Schmidt	Germany			✓	✓	✓			
Ashapura	India	✓	✓	✓	✓	✓	✓§		
Kaolin AD	Bulgaria	✓	✓	✓	✓	✓			

Source: Main parties.

*Based on main party data.

‡We assumed that a supplier produces paper-coating kaolin grades if parties indicated that a supplier supplied to 'paper' applications, without specifying whether this included the filler as well as the coating.

‡We understand that AKW supplies Pharmacopeia Europea certified grade kaolin.

§Crop protection.

¶Cosmetics.

Note: ✓ = supplies to a given application.

Market share of imported kaolin

- We understand that, of the suppliers listed in the table above, AKW currently supplies to UK tableware customers. Furthermore, there are non-UK-producer kaolin grades imported into the UK, either directly by customers or by distributors, for performance-mineral applications.
- Table 4 shows our estimates of kaolin imports by application in 2012. It indicates that sales of 'independent' imports of kaolin amounted to around [X] kt for tableware applications, which is around [5–10] per cent relative to the UK total supply of tableware grade kaolin, and around [X] kt for performance mineral applications (around [0–5] per cent relative to the UK total supply of performance-mineral-grade kaolin, excluding life-science applications). Overall, the share of 'independently'

imported kaolin was around [0–5] per cent in 2012, which is a relatively low value.² We note that if we included kaolin imported and used/sold by Imerys and Goonvean, the share of imports would appear to be higher.

TABLE 4 Estimated volumes of UK sales and imports, 2012

	<i>kt</i>							
	<i>SW</i>	<i>TW</i>	<i>PF</i>	<i>PC</i>	<i>PM</i>	<i>LS</i>	<i>Other</i>	<i>All</i>
UK producer UK sales	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]
<i>Of which:</i>								
Imerys	[<]	[<]	[<]	[<]	[<]		[<]	[<]
Goonvean	[<]	[<]	[<]		[<]	[<]	[<]	[<]
Sibelco	[<]				[<]			[<]
UK independent imports	[<]	[<]	[<]	[<]	[<]	[<]		[<]
<i>Of which:</i>								
AKW		[<]						[<]
Thiele				[<]	[<]			[<]
BASF					[<]			[<]
Other					[<]			[<]
								<i>per cent</i>
Share of independent imports (main party sales)	-	[5–0]	[<]	[5–10]	[0–5]	[<]	[<]	[0–5]
Share of independent imports (all UK sales)	-	[5–10]	[<]	[5–10]	[0–5]	[<]	[<]	[0–5]

Source: CC analysis.

Note: Main party UK sales include imported kaolin. 'Independent' imports do not include data on kaolin grades for performance-mineral application imported by some further distributors, for which we do not have the data. The figures for imports may include some calcined kaolin. The total includes sales only to those applications listed above. SW = sanitaryware, TW = tableware, PF = paper filler, PC = paper coating, PM = performance-mineral applications, LS = life-science applications. 'Other' includes hydrous kaolin supplied to reinforced fibreglass, refractory, boiler additive, ceramic engineering, tiles, and glazes applications.

Main and third party views on kaolin imports

Main party views

- The main parties pointed out the significant amounts of cross-border trade as evidence for Europe-wide or worldwide markets. The main parties said that there was significant cross-border trade within the EEA, and that there were significant imports of kaolin also from outside the EEA, in particular from the USA, Brazil, Ukraine and Asian countries (primarily China).

Transport costs and the competitiveness of imports

- In relation to how imports compete with local producers, the main parties told us that domestic producers of kaolin did not possess a unique advantage over imports. As an example, they noted that they exported significant volumes of kaolin from the UK to France and Germany where local producers were present. According to Imerys and Goonvean, the substantial exports of kaolin from the UK made in the face of local competition indicated that cross-border transport costs were not an appreciable barrier to trade.

² 'Independent' imports of specialty-grade kaolin is likely to be underestimated, since we do not have data on volumes at UK distributors offering imported kaolin other than [<]. We were told that [<] and possibly some other distributors sell imported kaolin to performance-mineral applications to smaller customers.

11. Moreover, the parties said that whilst prices varied substantially between grades and across customers, both of them had found it profitable to make export sales in a very large number of instances at delivered prices which were highly competitive or lower than delivered prices in the UK. The main parties also said that imports into the UK were further facilitated by the fact that diesel prices were substantially lower in the main Continental European countries where EEA producers were located, which would lower their supply chain costs compared with supplying from Cornwall (which was often a substantial distance from UK customers).
12. The merger parties questioned the extent to which customers had properly investigated the cost of importing kaolin as they considered the incremental transport costs to be low and imports to be viable.
13. Imerys said that, while transport and logistics costs were an important factor for the customer when considering the total cost to be paid to get the kaolin from the producer's site to its site, the costs of production and the producer's margin would also affect the ultimate price paid by the customer and therefore the competitiveness of the price. Imerys explained that the producer might be willing to accept a sales price at which it broke even, or even a contribution-based price, in order to win a purchase.

Barriers to imports (other than transport costs)

14. The main parties said that there were no other significant barriers to importing kaolin. They claimed that there was no requirement to invest in import facilities in order to import kaolin into the UK, and that there were a large number of ports suitable for vessels carrying kaolin. As an example, the main parties told us that they used bulk carriers for their export vessels with box-type holds and a capacity of between 1,377 and 11,000 tonnes for Imerys and between 1,200 and 5,500 tonnes for Goonvean; they explained that it was possible to have multiple grades of kaolin or other minerals on the vessels as they typically had movable bulkheads, and it was also possible to ship a mixture of bagged and bulk products. The smallest parcel size shipped by Imerys was 300 tonnes.
15. In relation to shipload sizes, the main parties added that some customers, such as [REDACTED], bought non-kaolin minerals and the parties claimed that the transport costs of supplying kaolin to these customers from abroad could be reduced by transporting it in mixed loads alongside the non-kaolin minerals. The main parties thought that the prospect of winning non-kaolin as well as kaolin business from these customers would make them an attractive opportunity for those importers that supplied multiple minerals in particular.
16. The main parties submitted that there were a number of large distributors, which distributed kaolin to smaller customers in the UK and had experience of importing minerals, and that importers could supply customers via one of these distributors if the volumes demanded by individual customers were insufficient to justify the transport costs. The main parties noted that these distributors could and did reduce transport costs by making group shipments of minerals for multiple customers.
17. The main parties told us that the only potential investment/cost required for imports would be leasing of warehousing capacity near the port of consumers. They said that there was a considerable supply of suitable storage facilities. Imerys noted that Furlong had storage facilities in the Midlands that it used to store material it imported from AKW, and could provide the non-UK suppliers with these storage facilities. In relation to storage costs, Imerys said that its storage facility rental costs amounted to approximately £[REDACTED] per tonne.

Sanitaryware

18. The main parties claimed that UK customers could readily substitute Soka's kaolin for those of the parties' kaolin in sanitaryware and performance-mineral applications, even though Soka did not currently sell kaolin in the UK. The parties noted that Soka had sites in Brittany that were close to the Channel port of St Malo, which had many sea connections to the UK.
19. By way of comparing the cost of importing kaolin, Imerys said that its cost of transporting kaolin by rail to Cliffe Vale (where Imerys's distribution centre for the potteries region was based) averaged £[redacted] a tonne and onward shipment to customers near Stoke-on-Trent was a further £[redacted] a tonne, totalling £[redacted] a tonne. The main parties suggested that the transport cost disadvantage faced by the non-UK suppliers would be as low as around £4 to £7 a tonne.
20. Imerys noted that Ideal Standard had its own internal logistical organization, which it could use to import kaolin into the UK if it considered this to be desirable.

Tableware

21. The main parties told us that AKW already supplied UK customers with substantial volumes of tableware-grade kaolin and would have the ability and incentive to increase its UK sales from its existing operations in Continental Europe if UK suppliers hypothetically increased prices above the competitive level. Additionally, the main parties believed that AKW had suitable grades and deposits to be able to compete with their grades. They told us that Jesse Shirley (a UK tableware manufacturer no longer trading) had been able to replace SSP from Devon with AKW's OKA G grade and had requested that Imerys offer a bulk price on SSP to compete with OKA G.
22. The main parties noted that there was intense competition between UK and non-UK tableware producers, which provided a strong indirect constraint on the parties' pricing of tableware kaolin to UK customers where the UK tableware market was in long-term decline. The main parties submitted examples of its tableware customers competing internationally with tableware producers that did not use Cornish kaolin. They added that this indicated there was nothing unique about the Cornish kaolin.

Paper filler

23. In relation to paper-filler applications, the main parties told us that the incremental transport costs for imports were low, and that European producers—eg ECESA, Vimianzo, Lasselsberger, Sibelco and AKW—were well placed to supply UK customers directly or via distributors such as [redacted]. The main parties said that these transport costs could be reduced further if these producers consolidated their shipments of paper-filler kaolin with kaolin for other applications, such as CPM kaolin grades. By transporting the kaolin in dry form and using slurring facilities in the UK at the customer's site, for example [redacted] Bury facility, the logistics costs would be reduced.
24. As an example, the main parties told us that they were aware of ECESA selling approximately 40 to 50 kt of its Spanish paper kaolin to Scandinavian customers, and estimated that ECESA transported paper-filler kaolin from Spain into Norway and sold it at a delivered price of approximately €100 per tonne, compared with Imerys's delivered price of €[redacted] per tonne. The main parties claimed that this indicated that ECESA could readily supply paper-filler kaolin to UK customers at a competitive

price, transporting the products from Spain as it did for its Norwegian customers. We note that the main parties have not provided any further evidence or explanation to support this. Also, the volumes supplied to Scandinavia are far in excess of the likely demand from UK paper-filler customers, suggesting that there is not a strong read across between Spanish exports to Scandinavia and exports to the UK.

Performance-mineral applications

25. The main parties said that they faced, and would continue to face, strong competition from overseas suppliers of kaolin for performance-mineral applications, such as AKW, Dorfner, Soka, ECESA, Vimianzo, BASF, Thiele and others, and that overseas suppliers produced a number of competing performance-mineral kaolin grades which were comparable to the parties' grades.
26. The main parties noted that there were a number of large distributors in the UK with experience in importing minerals, including kaolin—[REDACTED], WhitChem, RBH, Lawrence Industries. The main parties said that these distributors could readily increase or switch imports, and had the technical expertise to assist customers in switching, if profitable opportunities were to arise.

Third party views

27. We have summarized the views of customers on imported kaolin for each application in Appendices F to I. Below we summarize the views of kaolin producers (UK and non-UK) and distributors on importing kaolin into the UK.

AKW

28. AKW told us it believed that the kaolin market was at least Europe-wide, on the basis that its kaolins were exported to a large number of European and non-European countries. AKW expressed the following views in relation to imports into the UK:
 - (a) Goonvean purchased AKW's Arcano grade for technical reasons—ie to blend the product with its own grades to achieve the desirable properties in the end-product. [REDACTED]
 - (b) Transport costs were a disadvantage for non-UK suppliers, but the feasibility of imports also depended on the amount imported. For the amounts it was presently selling in the UK (around [REDACTED] kt in 2012) the scale was not sufficient to establish itself in the UK through warehouses etc such that the costs would be lowered further. Transport costs were non-linear, ie larger shipments would mean lower transport costs per tonne.
 - (c) Technically highly advanced special products would travel further than commodity grades.
 - (d) Performance minerals were very technical products that took a lot of explanation to the customers and hence building business in the UK would take time.
 - (e) [REDACTED]
 - (f) European producers, including itself, Sedletsy and Lasselsberger, would be able and willing to supply the UK if the prices went up and opportunities arose. The merger might lead to AKW having a better access to the UK market as customers might look for alternatives. [REDACTED]

- (g) AKW had R&D and technical know-how to advise customers and help them reformulate, work on developing suitable kaolin products.

Soka

29. Soka told us that it supplied a UK tile customer. It imported kaolin with a 2 to 3.5 kt vessel to Liverpool once or twice a year, where it stored it as the customer did not have storage facilities. While Soka technically could supply competing sanitaryware grades into the UK, it did not do so due to logistic concerns—ie the cost of importing. The only reason it was able to import was because local alternatives were not suitable for the tile customer. Soka noted that UK producers reduced prices when it attempted to interest UK customers, making it difficult for Soka to expand its supplies in the UK.

Sibelco

30. Sibelco told us that it did not import kaolin into the UK. It considered that there was kaolin comparable to the kaolin from Cornwall outside the UK, such as those offered by AKW, Zedlecky Kaolin, and suppliers from China.
31. Sibelco noted that transport costs would play a role in the competitiveness of imported kaolin, but did not think that other factors, such as security of supply, timing of supply, etc, although relevant, would affect the competitiveness of imported kaolin.
32. Sibelco made these additional points regarding imports into the UK and international trade:
- (a) Low-price kaolin grades were probably less economical to trade internationally or import into the UK since transport costs relative to the value could be significant.
 - (b) Customers imported from the UK because they valued the quality and consistency of the product.
 - (c) Transport costs were a significant barrier to imports for kaolin grades similar to its own grades. Currently there were no imports, through distributors or otherwise, of kaolin grades comparable to its own grades.

[REDACTED]

33. [REDACTED] told us that imports from Europe (eg the Czech Republic) were potential alternatives to the Cornish kaolin produced by Imerys and Goonvean. [REDACTED] believed that its customers could replace Cornish kaolin with imported alternatives, but this would be subject to a successful trialling and switching process.
34. [REDACTED] noted that the logistical costs of importing the kaolin to the UK were too high for the imported kaolin to be competitive at the present time. For example, it estimated that it cost around £30 to £50 per tonne to transport kaolin from Ukraine to customers in the UK. This compared to transport costs from Cornwall to customers of around £300 to £350 per load (a load was approximately 24 to 29 tonnes of dry kaolin), which translated into a price disadvantage of kaolin imported from Ukraine of around £20 per tonne.
35. [REDACTED] told us that the cost of transport needed to be compared against the price of kaolin, which ranged from around £80 to £120 per dry tonne for paper-filler kaolin grades, and from around £300 to £355 per dry tonne for paper-coating kaolin grades.

In general, [X] noted that it was more costly relative to price to import lower-quality grades of kaolin than higher-quality grades of kaolin. We note that, based on [X] figures for average paper-filler kaolin prices and for the additional cost of importing from Ukraine, imports would have a cost disadvantage of between 17 and 25 per cent relative to the average prices of paper-filler kaolin grades (though the percentage would be lower if the cost of slurring and other relevant costs, incurred by both the domestic and the imported suppliers, would be included).

36. [X] noted that the price of oil could affect the cost of importing kaolin by ship. The price of oil peaked in 2008 causing a rise in the cost of importing kaolin. [X] told us that exchange rate fluctuations was another potential difficulty for importing, eg from the USA (eg it has become difficult to import recently due to a weaker British pound against the US dollar, if compared with five or so years ago when the British pound was stronger).
37. [X] told us that imported kaolin grades could be commercially 'on a par' with the grades produced in Cornwall, even though the cost of importation could be as much as half of the delivered price. [X] told us that the security of supply of imported kaolin was not an issue, as long as the distributor had the right logistics in place.

WhitChem

38. WhitChem told us that it distributed Imerys's performance-mineral-grade kaolin, and imported Imerys's pharmacological-grade kaolin Light Kaolin BP from Australia. It noted that lead times of importing from Australia (three months) may affect the competitiveness of imported kaolin. We understand that WhitChem regards other distributors of performance minerals and chemicals as its competitors, including those distributing kaolin grades of non-UK producers (such as Omya, BASF).

Richard Baker Harrison

39. RBH told us that it did not import hydrous kaolin into the UK, but it did import other minerals, such as talc. It had not considered importing hydrous kaolin, and implied that the cost of importation relative to the price of kaolin might be the reason.

Exports of kaolin from the UK

Geographic spread of exports

40. We examined the main party export data more closely in order to understand the geographic spread of the exports, and what it implies about the relative importance of transport costs in exports and imports of kaolin. The results of this analysis are summarized in [Annex 1](#).
41. We found that both Imerys's and Goonvean's exports of tableware and sanitaryware kaolin grades in particular travel long distances from the UK, including to Asia, the Middle East, Africa and the Americas. This is less the case for performance-mineral kaolin grades where the UK and Europe are the main markets, and no paper-filler kaolin is exported beyond Europe.

Pricing of exports

42. We compared UK and non-UK average prices by kaolin grade. For a sample of Imerys's and Goonvean's most important kaolin grades (in terms of UK sales), we

calculated 2012 average prices by country, including only those export sales exceeding 100 tonnes in 2012. In effect, this analysis controls for product mix and, to an extent, shipping distance, but does not take into account the mix of different delivery terms (eg some ex-works, some delivered), individually negotiated prices with customers, and other factors influencing the prices to different customers.

43. The results are reported in [Annex 1](#). From our analysis we observe the following:
- (a) There is no clear pattern in levels of UK versus non-UK sales prices, with the UK average price being sometimes lower and sometimes higher than average prices of the same kaolin grade exported. There is no clear pattern across countries (eg closer versus farther countries) or across grades (eg higher value versus lower value grades).
 - (b) The average exported price relative to the average UK price can range from being half the UK price to twice the UK price, for example.
44. While the results of this analysis are not very informative about the levels of transport costs, they point to price differentiation across geographic areas. This could be an indication of different delivery and competitive conditions in various geographic areas. We note that comparisons are difficult to make because of a mix of delivery terms, packaging, product form, and other factors influencing prices.

Pricing for international customers

45. There are some customers to whom Imerys and Goonvean supply on Europe-wide basis (ie in the UK and outside the UK). We compared UK and non-UK prices for these international customers. This analysis, to an extent, controls for the delivery terms and individually negotiated prices if compared with a straightforward comparison of average prices across countries.
46. We analysed UK and non-UK prices paid by two Imerys customers—[redacted] and [redacted]—and one Goonvean customer—[redacted]. Only these customers had both UK and non-UK purchases of the same kaolin products, although Imerys and Goonvean have other international customers who purchase different grades and/or minerals for different locations. The main parties told us that the prices with [redacted] and [redacted] were negotiated on a pan-European level, and ex-works price was the same, but the delivered price differed by customer location. Thus, we understand that any differences in prices paid by these customers in different locations would reflect differences in transport costs.
47. Table 5 shows average Imerys UK and non-UK prices for [redacted] and [redacted]. The last column shows the differential with respect to the UK price. We observe that in some instances the differential between the UK and the non-UK prices is negative, suggesting that transport costs to some non-UK locations (eg in the Republic of Ireland and Bulgaria) are lower than delivery costs to the UK locations on average. Mostly the differential is positive, suggesting higher transport charges to non-UK locations, ranging from £[redacted] per tonne to £[redacted] per tonne. However, we note that the results of the price differentials are difficult to interpret as they are not always consistent, eg the differential between the UK and Swedish prices is [redacted].

TABLE 5 Imerys's UK and non-UK prices to its international customers, 2012

Customer	Product	Country	Volume tonnes	Value £'000	Average price £/tonne	Price difference to UK £/tonne
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Imerys data.

48. Table 6 shows average Goonvean's UK and non-UK prices in 2011 and 2012 for one of its [REDACTED] international customers, [REDACTED]. [REDACTED] purchases Goonvean's [REDACTED] kaolin for its UK, [REDACTED] and [REDACTED] locations. The price differential between deliveries to the UK locations and deliveries to locations in Germany are fairly consistent at £[REDACTED] per tonne, indicating that the cost of delivering to Germany compared with the cost to delivering to the UK location are slightly higher. The main parties noted that the volumes supplied to France were small.

TABLE 6 Goonvean's UK and non-UK prices to Armstrong, 2011/12

Product	Year	Country	Volume tonnes	Value £'000	Average price £/tonne	Price difference to UK £/tonne
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis of Goonvean data.

Analysis of transport costs

49. In this section, we set out:

- (a) analysis of the importance of domestic transport costs;
- (b) analysis of import costs, based on a report submitted by the parties' economic advisers (the 'transport costs report');
- (c) third party views on transport costs; and
- (d) our analysis of the cost of importing, based on data received from the main and third parties.

Analysis of domestic transport costs

50. We analysed the importance of transport costs within the UK. We compared Imerys's budgeted transport costs for 2013 with the delivered price per tonne, for a number of customers and grades.

51. The results are shown in Table 7.

TABLE 7 Imerys's budgeted 2013 transportation costs as a percentage of delivered price

Customer	Product	Delivered price £/t	Transport costs £	Cost (% of price) %
<i>Paper filler</i>				
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Sanitaryware</i>				
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Tableware</i>				
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Performance minerals</i>				
<i>Bulk</i>				
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Bagged</i>				
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: AlixPartners report (20.05.13). Data supplied by Imerys—CC analysis.

52. Table 7 shows that domestic transport costs account for between [REDACTED] and [REDACTED] per cent of the delivered price of a kaolin grade. Transport costs are most significant for paper filler ([REDACTED] per cent of delivered costs) and sanitaryware ([REDACTED] per cent) and of less importance for tableware ([REDACTED] per cent) and bagged performance-mineral grades ([REDACTED] per cent).

Analysis of import costs presented by the parties

53. The parties' economic advisers submitted a report on transport costs. This report presented data on the freight costs and land transport costs faced by importers, as estimated by Imerys.³ The analysis focused on the cost of supplying selected UK customers because prices vary between customers and transport costs vary depending on the form of the product being delivered (slurry, bulk, bagged, intermediate bulk container) and the location of the customer. The results of the submitted analysis are summarized below.

Paper filler

54. Table 8 summarizes the results presented for paper-filler kaolin grades. It shows: the customer, product, the Imerys delivered price, Imerys's estimates of the transport costs that are or would be incurred by itself, ECESA (Spain) and Sibelco, and an analysis of the differentials.

³ These estimates were based on third party quotes and Imerys's own budgeted prices and transport costs for 2013. The parties noted that actual transport costs faced by competitors might be lower than those estimated because they were based on actual quotations but before negotiation and did not allow for combined deliveries.

TABLE 8 Paper filler incremental cost analysis (based on 2013 budgeted transport costs)

[REDACTED]

55. The report argued that Sibelco's transport costs are likely to be lower than Imerys's because Sibelco is located closer to the customers; and that ECESA could deliver paper-filler product to Imerys's customers at a delivered price between [REDACTED] and [REDACTED] per cent above the Imerys delivered price.
56. The analysis excluded the costs of slurring and associated storage and it is assumed that Sibelco (and ECESA) would procure these services from [REDACTED] (assuming capacity was available).

Sanitaryware

57. Table 9 summarizes the results for sanitaryware. It presents estimates of transport costs that are/would be incurred by Imerys, Sibelco, Mota (Portugal) and Soka (France) if they supplied Sibelco.

TABLE 9 Sanitaryware incremental cost analysis (based on 2013 budgeted transport costs)

[REDACTED]

58. The report concluded that the analysis showed that Sibelco is a viable alternative supplier (with incremental transport costs £[REDACTED] per tonne ([REDACTED] per cent) less than Imerys's transport costs). It also concluded that the incremental transport costs faced by Mota (Portugal) and Soka (France) were around [REDACTED] to [REDACTED] per cent above the Imerys delivered price.

Tableware

59. Table 10 summarizes results for tableware. It includes the budgeted transport costs for Imerys in 2013, as well as the estimated transport costs for Sibelco, Mota (Portugal) and AKW (Germany).

TABLE 10 Tableware incremental cost analysis (based on 2013 budgeted transport costs)

[REDACTED]

60. The report argued that the analysis showed that Sibelco's transport costs are lower than Imerys's transport costs. It also concluded that the incremental transport costs of Mota (Portugal) were slightly higher than Imerys's transport costs (by [REDACTED] to [REDACTED] per cent of the Imerys delivered price).
61. The incremental transport costs which would be incurred by AKW (Germany) are [REDACTED] per cent above the Imerys delivered price for the AKW [REDACTED] equivalent product and [REDACTED] per cent above the Imerys delivered price for the AKW [REDACTED] equivalent product. Imerys noted that AKW's product range is particularly competitive as regards the higher-quality tableware grades such as [REDACTED].⁴
62. Imerys said [REDACTED]. For example, as regards [REDACTED], the incremental transport costs faced by AKW would give it an adjusted ex-works price of around £[REDACTED] per tonne for Furlong (assuming that AKW matches Imerys's delivered price). Imerys claimed that

⁴ The report argued that a distinction should be drawn between Imerys's lower-priced tableware grades (which sell for a delivered price of around £[REDACTED]/t), and its more expensive grades (such as [REDACTED]) which has delivered prices to Imerys's main UK customers of £[REDACTED]-£[REDACTED]/t).

it had customers that it had supplied at ex-works prices that were lower than £[redacted] per tonne in 2012.⁵

Commodity performance minerals

63. Three alternative suppliers, namely Sibelco (UK), Soka (France) and AKW (Germany), were identified as potential suppliers to a selection of eight UK performance-mineral customers. Table 11 compares the incremental transport costs of these three suppliers with Imerys's transport costs.

TABLE 11 CPM incremental cost analysis (based on 2013 budgeted transport costs)

[redacted]

64. The report stated that the analysis showed that Sibelco would have lower transportation costs than Imerys. This was not the case with Soka and AKW. The incremental costs estimated for Soka to supply performance-mineral grades to these customers were at least [redacted] per cent of the Imerys delivered price whilst the incremental costs for AKW were at least [redacted] per cent. Despite the high incremental costs, the report noted that sales would still be profitable for AKW and Soka (even if the suppliers absorbed the incremental transport costs to match the Imerys sales price). Imerys claimed that its market intelligence indicated that AKW and Soka made some kaolin sales at very low prices such that these sales contributed towards their fixed cost base.
65. Imerys's economic advisers presented the following example to indicate that it believed AKW could sell performance minerals into the UK despite the high incremental costs presented in the transport costs report. In 2012, Imerys's lowest ex-works price for [redacted] in the UK was £[redacted] per tonne for [redacted]. Deducting the highest estimated incremental costs of £[redacted] per tonne for AKW would give an adjusted ex-works price of £[redacted] per tonne. [redacted] Imerys considered that selling performance-mineral kaolin at an ex-works price of £[redacted] per tonne would make a positive contribution to the fixed costs and profitability of any kaolin producer. Such a sale would generate an incremental margin for AKW and Soka, which were both operating well far from full capacity utilization according to Imerys.

Assumptions

66. A number of assumptions were made in the report, an assessment of which is highlighted below:
- (a) Throughout the analysis presented comparisons have been made against a select set of products supplied to customers. The rationale behind this selection is not detailed in the report. It is not therefore possible to establish the extent to which these are representative.
 - (b) *Paper filler*. The shipping costs are based on shipping 1,500 tonnes of kaolin. To put this into context, in 2012 the annual tonnage sold by Imerys to Arjowiggins was [redacted] tonnes. No quote is provided for shipping a lower tonnage.
 - (c) *Sanitaryware*. The shipping quotes received in relation to both Mota (Portugal) and Soka (France) relate to shipping on 2,000-tonne vessels. It is thus assumed that shipments of this quantity can be made. To put this into context, in 2012 the

⁵ The extent to which this is a like-for-like comparison would depend on the substitutability of the grades.

annual tonnage sold by Imerys to Ideal Standard was [REDACTED] tonnes. No quote is provided for shipping a lower tonnage and Ideal Standard has no suitable storage facilities. Furthermore, the costs of supplying other Imerys UK sanitaryware customers in the UK who purchase smaller volumes is not presented ([REDACTED], for example).

- (d) *Tableware*. The shipping quotes received in relation to both Mota (Portugal) and AKW (Germany) relate to shipping on 2,000-tonne vessels. It is thus assumed that shipments of this quantity can be made. To put this into context, in 2012 the annual tonnage sold by Imerys to Furlong (the largest tableware customer) was [REDACTED] tonnes. No quote is provided for shipping a lower tonnage.
- (e) *Performance minerals*. The bagged road rates presented in the report assume 24-tonne loads.

Third party views on transport costs

67. We have received a number of estimates of the cost of transport that third parties would incur in relation to the kaolin imports they require. These are outlined below.

Sibelco

68. Sibelco felt that for the range of kaolins it produced in the UK was competition from abroad but that transport costs affected how competitive imports could be in price terms. Although Sibelco did not import kaolin from abroad, it did export and it provided costs associated with this for comparative purposes:
- (a) Sibelco sold kaolin in the UK ex-works at an average of about £[REDACTED] a tonne. Based on the Sibelco shipping rates, transport costs to Spain were £[REDACTED] per tonne. This excluded any road transportation to and from ports and also excluded port discharge fees. In total, Sibelco estimated that transportation costs could be easily £[REDACTED] or more per tonne or even £[REDACTED] per tonne. [REDACTED]
- (b) Sibelco noted that the cost for it to transport kaolin from its facility in Devon to Stoke-on-Trent was £[REDACTED] per tonne. [REDACTED]

Furlong Mills

69. Furlong, a UK customer and distributor of tableware kaolin, stated that importing kaolin was expensive and in instances where it had imported kaolin from Germany by tipper truck the transport costs represented 35 to 50 per cent of the delivered prices. [REDACTED]
70. Furlong has in the past transported kaolin into the UK via sea vessels at a cost of about £20 per tonne but said that in recent times this had not proved viable as imported quantities needed to exceed 4,000 to 5,000 tonnes. A quantity such as this would need to be stored for about five years given the rate of kaolin sales by Furlong. Storing the kaolin during this period would be an additional cost.
71. Furlong stated that it cost approximately £15 or £16 per tonne to bring a product up from Cornwall to Stoke-on-Trent. It said that the cost was around £70 or £80 per tonne from Germany. Furlong provided an invoice for transport from Germany to Stoke-on-Trent in a tipper truck of 23 tonnes for indicating a cost of £71.53 per tonne.

72. Furlong was of the opinion that UK suppliers were currently offering a delivered price that made imports not economically viable.

Dudson

73. Dudson imports some kaolin from Imerys in New Zealand. This is a long-standing arrangement that Dudson has undertaken for many years as it requires particular kaolin for which it has not found an alternative to date (it is a high-value premium product).
74. Dudson estimated that 25 to 30 per cent of the delivered price of the kaolin it imported from New Zealand represented freight charges. Furthermore Dudson imported the kaolin from New Zealand [§] in 6-metre containers.

Ideal Standard

75. Ideal Standard does not import kaolin to the UK as it operates a just-in-time process. It did, however, provide details of transport costs of kaolin that it exported from the UK to other locations for comparative purposes:
- (a) Kaolin shipped from the UK to Egypt (about [§] tonnes) cost about €[§] per tonne for ocean freight.
 - (b) For UK to Italy, Ideal Standard estimated the cost at €[§] depending on the size of the vessel and the size of the package, and which plant in Italy it was going to.
 - (c) For UK to Bulgaria (to the port only), Ideal Standard paid about €[§] based on a 3,500-tonne vessel being used.
76. Ideal Standard noted that using a larger vessel (5,000+ tonnes) reduced the transport price per tonne [§].

Richard Baker Harrison

77. RBH is a UK mineral and chemical distributor that imports products to the UK (not kaolin) from, for example, France. It incurs transport costs of £[§] per tonne importing plaster by road from northern France. To make this viable, it imports in about 25-tonne loads (total cost £[§]). RBH said that if this product were coming from further away, for example Germany, the transport costs would be much higher.

CC analysis of import costs

78. Table 8 analyses information on import costs provided by third parties, and details the incremental transport costs associated with importing kaolin into the UK taking into account the domestic transport costs submitted by Imerys.

TABLE 12 CC analysis of import costs

	[REDACTED]										
Paper filler	[REDACTED]	[REDACTED]	[REDACTED]								
Sanitaryware	[REDACTED]	[REDACTED]	[REDACTED]		[REDACTED]		[REDACTED]	[REDACTED]	[REDACTED]		
Tableware	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]					
CPM											
Bulk	[REDACTED]	[REDACTED]	[REDACTED]								
Bagged	[REDACTED]	[REDACTED]	[REDACTED]							[REDACTED]	
PPM	[REDACTED]	[REDACTED]	[REDACTED]								[REDACTED]

Source: Imerys and third parties (CC analysis).

Note: [REDACTED].

79. Table 8 shows that customers generally thought that the incremental transport costs of purchasing from an importer were broadly in line with the costs submitted in the parties' report on transport costs, although in some cases they might be smaller. For example, the transport costs provided by [REDACTED] indicate that it would be able to import Kaolin from Egypt or Bulgaria at a delivered price [REDACTED] the delivered price that it currently receives from Imerys.
80. The above analysis also indicated that third parties generally thought that the incremental transport costs of importing tableware kaolin were greater than the incremental transport costs submitted by the parties.

Analysis of delivered prices of imports

81. We examined pricing of kaolin grades produced by non-UK kaolin producers, and compared the ex-works and estimated delivered prices to customers in the UK to comparable kaolin grades produced by Imerys and Goonvean. The objective of this analysis is to understand at what price imported kaolin (for comparable kaolin grades) could be delivered to UK customers.
82. For this purpose, we used the following information:
 - (a) Ex-works prices of non-UK kaolin producers: information given to us by non-UK kaolin producers indicated which of their grades were considered to be substitutable with kaolin grades supplied by Imerys and Goonvean in the UK.
 - (b) Estimated transport costs for importing and delivering to the respective UK customers: we used a range of estimates, based on information received from the main and third parties.
83. Transport and logistics costs were added on to the ex-works prices of non-UK producers to obtain estimates of delivered prices for the imported kaolin. Below we set out our estimates of transport costs for various supply chain scenarios and based on various sources of information.⁶ These are used to obtain a range of estimates for delivered prices ('low' to 'high').
84. We have obtained a sample of prices for non-UK producers' kaolin grades—some of these prices were ex-works prices, while others were, for example, delivered prices to a UK port. In order to make comparisons with delivered prices of Imerys and

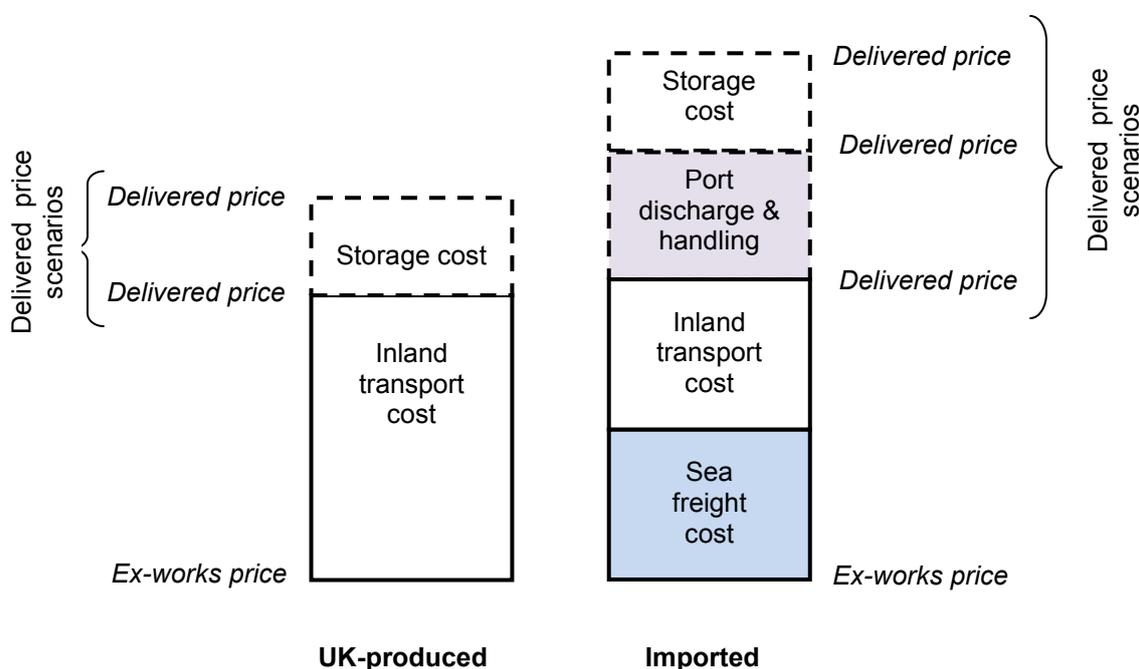
⁶ We used transport and logistics cost estimates provided to us by the main parties through a submission on transport costs, and estimates provided by some third parties.

Goonvean, we requested information on the various components of transportation and logistics for importing kaolin, such as freight, port handling, storage, and delivery to the end-customers. We then could combine the required transportation/logistics costs components with the non-UK producers' pricing data to obtain comparable delivered price estimates.

85. Figure 1 illustrates our approach and the various transport and logistics cost components that we considered in our analysis. There could be a number of delivered price scenarios, depending on whether the supply chain for a given customer involves storage of kaolin (and it could be the case that, for example, UK-produced kaolin would not require storage, but imported kaolin would). Some supply chains may also involve slurring, which would also be a relevant cost component to be included in the delivered price (this particular supply chain scenario is not shown in Figure 1).

FIGURE 1

Breakdown of delivered price of UK-produced and imported kaolin



Source: CC.

86. We used a range of estimates provided to us by the main parties and some third parties on the various components of transport and logistics costs. Table 9 below summarizes this information, and the basis for these estimates. We use these transport and logistics cost estimates to construct possible ranges of transport costs under various supply chain scenarios, and use these in combination with prices from non-UK suppliers to calculate delivered prices of non-UK produced (ie imported) kaolin.
87. We did not have storage cost estimates, but we note that these are likely to be incurred for imported kaolin, particularly where large quantities are imported (eg 2,000-tonne vessels). Furthermore, additional costs may be incurred, such as insurance, handling, etc. Thus, the importation transport cost estimates we use are likely to be underestimates.
88. The estimates that we use are shown Table 13.

TABLE 13 Estimates of transport and logistics cost for imported kaolin

No	Cost component	Description	Party	Estimate £
1	Sea freight + inland transport	From Spain to UK customers delivered, in bulk vessels	Sibelco	[REDACTED] per tonne
2	Sea freight + inland transport	Northern France to Stoke-on-Trent (RBH's site), in 25-tonne loads by truck by road	RBH	[REDACTED] per tonne*
3	Sea freight	Germany (AKW's site) to [REDACTED]	AKW	[REDACTED]†
4	Inland transport	Devon to Stoke-on-Trent	Sibelco	[REDACTED] per tonne
5	Inland transport	North Devon to Stoke-on-Trent (Furlong site)	Furlong	20.68 per tonne‡
6	Inland transport	Sibelco's site in Devon to Ideal Standard site in Stoke-on-Trent (bulk)	Ideal Standard	[REDACTED] per tonne
7	Import + inland transport	AKW's site in Kemmlitz, Germany, to Stoke-on-Trent (Furlong site), in tipper truck, 23 tonnes	Furlong	71.53 per tonne§

Imerys estimates (from Transport Costs Report)

8	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
9	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
10	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
11	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
12	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
13	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
14	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
15	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
16	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
17	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: The parties listed above.

*This is RBH's cost of importing plaster by road from northern France.

†AKW's transport cost for FOB from its site to [REDACTED].

‡Furlong provided invoice from [REDACTED].

§Furlong provided invoice from [REDACTED].

¶Includes transport to port and handling/loading at the origin.

Analysis

89. We estimated prices at which AKW, Soka and Vimianzo could deliver to the UK, and compared these estimates with Imerys and Goonvean delivered price. Our results are presented below for these three suppliers in turn.

AKW

90. We had prices of AKW's average ex-works prices for its grades, and AKW had indicated which of its grades were substitutes or alternatives to Imerys and Goonvean grades. In order to obtain the range of estimates for AKW's delivered prices, we used the supply chain scenarios and transport cost estimates outlined in Table 14 (with reference to the line numbers contained in Table 13 above).

TABLE 14 AKW: total importation cost estimates

<i>Application</i>	<i>Description</i>	<i>Line no</i>	<i>Total transport cost estimate</i>	<i>High/low estimate</i>
SW & TW	Delivery by sea freight (FOB) from AKW's site in Germany to [REDACTED]	[REDACTED]*	[£60–£70] per tonne	
SW & TW	Delivery from AKW's site in [REDACTED] in a tipper truck of 23 tonnes	[REDACTED]	[£70–£80] per tonne	High [£70–£80]
SW & TW	Delivery from AKW's site [REDACTED], using a 2,000-tonne vessel (Imerys estimates)	[REDACTED]	[£50–£60] per tonne	Low [£50–£60]
PM	Delivery from AKW's site in Germany to customers in [REDACTED] in a tipper truck of 23 tonnes (bulk/bagged)	[REDACTED]	[£70–£80] per tonne	High [£70–£80]
PM	AKW to customer, in 24-tonne trucks (bagged)	[REDACTED]	[£60–£70] per tonne, depending on customer location in the UK	Low [£60–£70]
PM	AKW to Akzo Nobel (bulk) (tonnage unknown)	[REDACTED]	[£70–£80] per tonne	

Source: CC calculations and the parties listed above.

*We use an estimate of £20 per tonne for transport from Devon/Plymouth to Stoke-on-Trent; the other two estimates we have—No 5 (£20.68 per tonne) and No 6 (£[REDACTED] per tonne)—are similar.

91. We took AKW's average ex-works prices, converted them from euros to British pounds, and added the two scenarios for total transport costs ('low' and 'high') to obtain estimates for delivered prices. These are shown in columns 8 and 10 in Table 15 below. We compared average delivered prices of Imerys and Goonvean kaolin grades with estimates of delivered prices of comparable AKW kaolin grades—the percentage difference is shown in columns 9 and 11 in Table 15, with a negative difference indicating that the estimated delivered price of AKW's grade is lower than the matched average delivered price of Imerys or Goonvean grade, and vice versa for a positive percentage difference.

TABLE 15 Estimated delivered prices of matching AKW kaolin grades, 2012

Imerys/Goonvean grade	Application	Pack	Average delivered price £/t	Matched AKW grade	Ex-works price		CC estimate of UK delivered—low		CC estimate of UK delivered—high	
					AKW price €/t	AKW price* £/t	AKW price £/t	AKW higher/lower %	AKW price £/t	AKW higher/lower %
<i>Imerys</i>										
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]†	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]†	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
<i>Goonvean</i>										
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]‡	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based on Imerys, Goonvean and AKW data, and transport cost estimates detailed in Tables 1 and 3.

*€ to £ exchange rate of 1.234 used—this is the Bank of England average spot rate in 2012.

†[X].

‡This is Goonvean's ex-works price; no delivered price to the UK customers in bagged available, as [X] purchases on ex-works basis (the other customers that get deliveries are very small).

92. Figure 2 illustrates the percentage differential of the estimated AKW delivered price relative to the delivered prices of the matching Imerys and Goonvean kaolin grades. Here we show AKW's delivered prices using the lower estimate for the total transport cost of importation and delivery (ie third column from the right in Table 15 above). The analysis is for 2012 prices.

FIGURE 2

Differential between AKW and Imerys/Goonvean delivered prices

[REDACTED]

Source: CC analysis based on Imerys, Goonvean and AKW data.

*[REDACTED]

Note: [REDACTED].

93. We observe that AKW's delivered price could be lower than the parties' delivered prices for the higher-priced kaolin grades, Imerys's [REDACTED] (TW), [REDACTED] (TW), [REDACTED] (PM) and Goonvean's [REDACTED] (TW). For the lower-priced kaolin grades, such as lower-quality end of the tableware kaolin grades and sanitaryware grades, and lower-quality performance-mineral (CPM) grades, AKW's kaolin would be more expensive in the UK on delivered price basis.
94. However, our analysis may underestimate the delivered price of AKW's kaolin grades for the following reasons:
- (a) The transport cost estimates we use are from the lower end of our estimates of the total transport and logistics costs of importation.
 - (b) The total cost may exclude relevant cost components, such as storage, insurance, handling, etc.
 - (c) AKW may not have substitutable grades; it indicated [REDACTED]. It noted that [REDACTED].

Soka

95. We received estimates from Soka of delivered prices of its LS sanitaryware kaolin grade to the various UK ports. Our estimates suggest that delivered prices to Ideal Standard facilities in Rugeley could be in the range of £[REDACTED] per tonne; however, this does not include any storage costs that would need to be incurred and may not include all the UK port handling charges that would be incurred.⁷ This is around [REDACTED] per cent higher than Goonvean's and Sibelco's delivered prices to Ideal Standard, but around [REDACTED] per cent lower than Imerys's current delivered price for [REDACTED]-grade kaolin.⁸ [REDACTED] represented around 34 per cent of sales volume of sanitaryware grades sold in the UK in 2012.

Vimianzo

96. We also received information on average price for grades supplied to paper filler from Vimianzo, a kaolin producer in Spain. We had no information regarding individual grades of Vimianzo and how they matched with those offered by Imerys and

⁷ The estimate is based on imports in a 2,000-tonne vessel.

⁸ We have taken Imerys's delivered price to be our estimate of £[REDACTED] per tonne.

Goonvean. Vimianzo indicated that its average price for paper filler grades was €[REDACTED] per tonne.

97. We used transport cost estimate number 1 from the estimates presented in Table 14, which is a range of transport cost estimates for delivery from Spain to customers in the UK, given to us by Sibelco. This may not include storage, handling, insurance, or other costs. This also does not include costs associated with further processing—namely, slurring.
98. Our analysis shows that Vimianzo's delivered price to the UK would be from £[REDACTED] to £[REDACTED] per tonne in dry form. By comparison, Imerys's delivered price for [REDACTED] in dry form is £[REDACTED] per tonne. This means that Vimianzo's delivered price would be at least [REDACTED] per cent more expensive.

Analysis of export sales and prices

Geographic spread of exports

1. We analysed Imerys and Goonvean export data, examining the geographic spread of the sales and average prices on a high level. The results of this analysis are summarized below.

Imerys

2. Table 1 below shows the geographic spread of Imerys's exports of the UK-produced kaolin. Paper-filler grades are exported only to Europe, and Europe is also the main export market for Imerys's tableware and performance-mineral-grade kaolin ([] and [] per cent of exports respectively). Asia is another important market for tableware grades, taking [] per cent of Imerys's exported tableware kaolin. The main export markets for sanitaryware kaolin are Europe ([] per cent of exports) and Africa ([] per cent of exports).

TABLE 1 Imerys's exports by application and region, 2012

Region	Sales volume (tonnes)				Share of exports volume (%)			
	SW	TW	PF	PM	SW	TW	PF	PM
UK	[]	[]	[]	[]				
Europe	[]	[]	[]	[]	[]	[]	[]	[]
Middle East	[]	[]	[]	[]	[]	[]	[]	[]
Africa	[]	[]	[]	[]	[]	[]	[]	[]
Asia	[]	[]	[]	[]	[]	[]	[]	[]
The Americas	[]	[]	[]	[]	[]	[]	[]	[]
Australia & New Zealand	[]	[]	[]	[]	[]	[]	[]	[]
Total	[]	[]	[]	[]				

Source: CC analysis of Imerys data.

Note: Numbers for Europe exclude the UK in this table. SW = sanitaryware, TW = tableware, PF = paper filler, PM = performance-mineral applications.

TABLE 2 Imerys's average prices by application and region, 2012

Region	Average prices (£/tonne)			
	SW	TW	PF	PM
UK	[]	[]	[]	[]
Europe	[]	[]	[]	[]
Middle East	[]	[]	[]	[]
Africa	[]	[]	[]	[]
Asia	[]	[]	[]	[]
The Americas	[]	[]	[]	[]
Australia & New Zealand	[]	[]	[]	[]
Total	[]	[]	[]	[]

Source: CC analysis of Imerys data.

Note: Numbers for Europe exclude the UK in this table. Average prices are calculated as weighted averages (ie total revenue divided by total volume).

3. We also looked at average prices by application and by region, shown in Table 2. Viewed in combination with the geographic spread data presented above, we see that, for example, lower-priced sanitaryware-grade kaolin has a further geographic

spread than the higher-priced kaolin for performance-mineral applications. Although like-for-like comparisons are difficult due to product mix, a mix of different delivery terms, etc, we observe that in some instances average UK prices are higher than exported prices—eg [REDACTED]. We note that sales to sanitaryware applications include Imerys’s kaolin grades used also in tableware applications, such as Remblend, Grolleg and Treviscoe.

Goonvean

4. Table 3 shows the geographic spread of Goonvean’s exports of the UK-produced kaolin. Paper-filler grades are exported only to Europe, and Europe is also the main export market for Goonvean’s tableware and performance-mineral-grade kaolin ([REDACTED] and [REDACTED] per cent of exports respectively). Asia and the Americas are also important outlets for Goonvean’s tableware kaolin grades, with [REDACTED] and [REDACTED] per cent shares of exports respectively. The main export markets for sanitaryware kaolin are Africa, the Middle East and Asia ([REDACTED], [REDACTED] and [REDACTED] per cent shares of exports respectively); only [REDACTED] per cent of the UK-produced sanitaryware kaolin grades stay in Europe (the UK and Continental Europe).

TABLE 3 Goonvean’s exports by application and region, 2012

Region	Sales volume (tonnes)				Share of exports volume (%)			
	SW	TW	PF	PM	SW	TW	PF	PM
UK	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]				
Europe	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Middle East	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Africa	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Asia	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
The Americas	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Australia & New Zealand	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]				

Source: CC analysis of Goonvean data.

Note: Specialty applications include sales to both CPM and PPM applications. Numbers for Europe exclude the UK in this table.

5. Goonvean’s average prices by application and by region are shown in Table 4 below. Viewed in combination with the geographic spread data presented above, we see that, for example, lower-priced sanitaryware-grade kaolin has a further geographic spread than the higher-priced kaolin for performance-mineral applications. Although like-for-like comparisons are difficult due to product mix, a mix of different delivery terms, etc, we observe that in some instances average UK prices are higher than exported prices—eg [REDACTED].

TABLE 4 **Goonvean's average prices by application and region, 2012**

Region	Average prices (£/tonne)			
	SW	TW	PF	PM
UK	[✂]	[✂]	[✂]	[✂]
Europe	[✂]	[✂]	[✂]	[✂]
Middle East	[✂]	[✂]	[✂]	[✂]
Africa	[✂]	[✂]	[✂]	[✂]
Asia	[✂]	[✂]	[✂]	[✂]
The Americas	[✂]	[✂]	[✂]	[✂]
Australia & New Zealand	[✂]	[✂]	[✂]	[✂]
Total	[✂]	[✂]	[✂]	[✂]

Source: CC analysis of Goonvean data.

Note: Numbers for Europe exclude the UK in this table. Average prices are calculated as weighted averages (ie total revenue divided by total volume).

Analysis of UK and export prices by grade

6. Below we present charts showing average prices by kaolin grade and by country. We have reported 2012 average prices for some of Imerys's and Goonvean's main kaolin grades (in terms of sales in the UK), and shown average sales prices in countries to which at least 100 tonnes were sold in 2012. The main parties noted that these average prices should be interpreted with caution as average prices did not account for differences in the volumes that were ordered, the delivery terms, the method of transporting kaolin to the customer, the product form and the product packaging.

Imerys

Sanitaryware

FIGURE 1

Average prices: NSC

[✂]

Source: CC analysis.

Tableware

FIGURE 2

Average prices: SP

[✂]

Source: CC analysis.

FIGURE 3

Average prices: SSP

[✂]

Source: CC analysis.

FIGURE 4

Average prices: Remblend



Source: CC analysis.

FIGURE 5

Average prices: Grolleg



Source: CC analysis.

Paper filler

FIGURE 6

Average prices: Intrafill 60



Source: CC analysis.

Note: Imerys noted that paper filler kaolin is generally supplied to UK customers in slurry form, and that this secondary processing added an additional cost, which was reflected in the higher price of paper filler kaolin sold in the UK.

Performance minerals

FIGURE 7

Average prices: Polwhite E



Source: CC analysis.

FIGURE 8

Average prices: Speswhite



Source: CC analysis.

FIGURE 9

Average prices: Supreme



Source: CC analysis.

FIGURE 10

Average prices: Polwhite B



Source: CC analysis.

Goonvean

Sanitaryware

FIGURE 11

Average prices: Diamond Prosper



Source: CC analysis.

Tableware

FIGURE 12

Average prices: Diamond Tableware and Diamond Porcelain



Source: CC analysis.

Paper filler

FIGURE 13

Average prices: Platinum Fill and Platinum SC



Source: CC analysis.

Performance minerals

FIGURE 14

Average prices: Opal epsilon



Source: CC analysis.

FIGURE 15

Average prices: Opal Gamma and Opal Alpha



Source: CC analysis.

Entry and expansion

Introduction

1. This appendix sets out the evidence on the extent of the barriers to entry into the kaolin production market and any restrictions on the ability of existing market participants to expand kaolin production.
2. This appendix does not cover the potential for importing greater quantities of kaolin into the UK, as this is covered in Appendix J. This appendix also excludes the secondary aggregates market, as this is covered in Appendix M.
3. This appendix is structured in two main parts. First, we set out the evidence on entry to the production of kaolin in the UK; second, we set out evidence on expansion, in terms of the likelihood and possibility of expanding UK production both in terms of expanding existing production capacity and expanding access to reserves.

Merger Assessment Guidelines

4. The CC's approach to barriers to entry and expansion is set out in its *Merger Assessment Guidelines*.¹ Below we provide a brief overview of some particularly relevant extracts from these.
5. Four types of barrier are listed: regulatory, structural (technological), the presence of economies of scale and strategic (first mover advantage).
6. In assessing whether entry or expansion might prevent an SLC, the CC will consider whether such entry or expansion would be (a) timely; (b) likely; and (c) sufficient.
7. The CC will typically gather information on several relevant factors:
 - (a) the history of past entry or expansion; this will include a consideration of the costs of such entry, how long any entrants traded in the market and the effects that entry or expansion had on competition in the market—in particular, whether past entry or expansion modified the pattern of behaviour and competition;
 - (b) evidence of planned entry or expansion by third parties;
 - (c) direct observations, or statistical information, on barriers to entry, expansion and exit; and
 - (d) the costs involved in entry or expansion and in operating at the minimum efficient scale necessary to achieve a reasonably competitive level of costs (and consequently to avoid any cost disadvantage from operating below the minimum efficient scale).

¹ www.competition-commission.org.uk/assets/competitioncommission/docs/pdf/non-inquiry/rep_pub/rules_and_guide/pdf/100916_merger_assessment_guidelines.pdf.

Entry to UK kaolin production

8. The UK kaolin producers are Imerys, Goonvean and Sibelco. These producers have been active in the UK production market for many years.
9. Imerys entered the kaolin market in 1990 with the acquisition of Dry Branch Kaolin Company (based in the USA). This position was consolidated in 1999, through the acquisition of English China Clays.
10. Goonvean was a subsidiary of Goonvean Holdings which was established in 1931 and mined the minerals found on the founding family's land. In 1995, Goonvean purchased additional kaolin reserves, through the acquisition of the kaolin division of Lafarge Aggregates.
11. Sibelco has been active in the UK market for many years, mining at the Headon and Shaugh pits in Devon. Sibelco expanded its operations in 2008 when it entered agreements with Imerys to access its reserves at Lee Moor and Hemerdon pits.
12. We could find no recent examples of instances where producers have entered the UK market.

Potential for entry

13. In order to enter the market as a UK kaolin producer, there are two essential requirements:
 - access to kaolin reserves; and
 - access to processing equipment.
14. Additionally, in order for entry to be likely, the market conditions must also allow for entry to be economically viable. An entrant would also need to gain the necessary planning and regulatory permissions.

Access to reserves

Views of the parties

15. Imerys identified 98 kaolin pits in the UK. Of these, 18 are noted as currently being worked with the remaining 80 having been worked in the past.
16. Imerys told us that there were kaolin deposits at the 80 previously worked pits but the nature and size of these was not known. Pits which could potentially be worked again in the future were harder to designate without detailed reserve estimation and planning consultation.
17. Of the 80 previously worked pits, the parties told us that [redacted] were owned by Imerys and [redacted] were owned by Goonvean, with the remaining [redacted] being in independent ownership (the beneficial owner of Goonvean Holdings owning [redacted]). Sibelco does not own any.
18. Even where kaolin reserves exist within a previously worked pit, the parties said that reopening the pit for production would only be considered if these reserves were of sufficient quantity and quality, and accessible at sufficiently low cost to extract on the basis of current and expected future demand for kaolin in the relevant applications.

19. Of the [X] independently-owned, previously worked pits, seven of these are covered by existing planning consents in that they are designated 'Long Term Working Areas' as defined within the 1998 St Austell china clay area ROMP.²
20. Imerys noted that the cost and timeliness of developing a new quarry could vary significantly depending on the location and the nature of the proposal, in particular whether the proposed site was supported by the mineral planning authority within its development plans, the extent of local environmental issues, the level of anticipated annual production, the quality and quantity of kaolin reserves, the legal interest the producer had in the surface and minerals, and the commercial markets being targeted.
21. Imerys was unable to estimate accurately the time and costs involved in opening a new kaolin quarry/processing plant from a planning perspective as this had not occurred for many years.
22. Imerys estimated a minimum three-year planning process from agreement with the mineral planning authority on the scope of the site to first development works. The planning phase would be likely to cost in excess of £500,000. However, the actual costs and timeline depend on the size, type and location of the development.
23. If planning permission was refused (and an appeal lodged, Imerys estimated that this could result in the process being prolonged (for around two years) with additional costs incurred.

Third party views and other evidence

24. Sibelco was of the opinion that if it required additional reserves in due course it could access them. It said that it was capacity constrained rather than constrained by access to reserves.
25. There are kaolin deposits in the UK that could be mined as they are currently defined as 'Active' under the Review of Mineral Planning Permissions, Environment Act 1995, and as such may be worked without further determination of planning conditions.
26. There are also kaolin deposits in the UK that are defined as Long Term Working Areas under the Review of Mineral Planning Permissions, Environment Act 1995, and as such may not be worked unless a scheme of working and restoration and new conditions has been approved by the Mineral Planning Authority.
27. Table 1 details the kaolin deposits identified by Cornwall Council in a 'China Clay' technical paper produced in January 2012.³

² ROMP – Review of mineral planning rights. A rolling program of reviews of all mineral planning permissions to ensure no environmental damage is taking place as a result of mining

³ www.cornwall.gov.uk/idoc.ashx?docid=c7a97daf-b01b-4c15-86c2-e14b29dad311&version=-1.

TABLE 1 **Known kaolin deposits, the status of these and the land owner**

<i>Site</i>	<i>Status</i>	<i>Land owner*</i>
Bloomdale	Not currently working (long-term working area)	1 & 3†
Hendra	Active (mica storage only)	1
Blackpool	Active (large resource retained for future extraction)	1 & 3‡
Longstone	Active (not currently worked)	1
Gothers	Not currently working (long-term working area)	1
Carpalla	Active (currently working residue dredging)	1
Goonbarrow	Active (not currently worked)	1
Gunheath	Active (currently worked for secondary aggregate)	1 & 2
Rosemellyn	Not currently working (long-term working area)	Third party
Wheal Rashleigh	Not currently working (long-term working area)	Third party
Gover	Not currently working (long-term working area)	1
Trethowel	Not currently working (long-term working area)	1
Penhale	Active (not worked—part of eco community proposal)	1
Baal	Active (not worked—part of eco community proposal)	1
Rocks	Active (mica storage only)	1
Lantern	Not currently working (long-term working area)	1
Molinnis	Not currently working (long-term working area)	Third party
Garker	Not currently working (long-term working area)	Third party

Source: Cornwall Council.

*1 = owned by Imerys; 2 = owned by Imerys and leased to a third party; 3 = owned by a third party and leased to Imerys.

†Ownership is held in trust. Imerys has 93 per cent ownership. Trust leases to Imerys.

‡Part of the north-east side of the pit is 50 per cent owned by the Trewithen estate.

Access to processing equipment

Views of the parties

28. The parties told us that the kaolin industry in the UK was mature and there had been no development, installation or construction of greenfield quarries, refining, drying or calcining plants for a number of years. The total cost and individual component costs for installing many of these assets is therefore difficult to estimate without a major estimation exercise.
29. Imerys provided Table 2 below which summarizes estimated capital costs for a new quarry, a new refining plant to produce fine and engineered kaolins, and a drying plant to produce about 150,000 tonnes a year. The costs presented assume complete new infrastructure including storage and settling tanks, dry storage bays and supporting infrastructure such as electrical and water supplies. For the reasons explained above, these are rough estimates.

TABLE 2 An estimate of the costs associated with opening a quarry, refiner and dryer

	<i>Major components and equipment</i>	<i>Indicative capital cost £m</i>
<i>Kaolin quarrying equipment</i>	<ul style="list-style-type: none"> • Site development and Overburden removal • Electrical supply • Water, Waste and product pumps and pipelines • Gravel, slurry and product pumps • Sand classification equipment (bucket wheel and conveyors) • Fine classification equipment (hydrocyclones) • Product thickening tanks • Service infrastructure (assumes all mobile plant is contracted) 	[∞]
<i>Kaolin refiner</i>	<ul style="list-style-type: none"> • Site development and electrics • Hydrocyclones and Centrifuges (plus dewatering) • Sand grinding • Reductive bleach plant • Magnetic separator • Pumps, pipelines and storage tanks 	[∞]
<i>Kaolin dryer</i>	<ul style="list-style-type: none"> • Site development, electrics and gas supplies • Screening plant, dewatering centrifuges, presses, pumps and pipelines • Bed or band dryer, gas treatment system and filtrate effluent plant • Storage tank bays and infrastructure 	[∞]

Source: Imerys.

30. The parties told us that mining costs were variable between quarries. A small quarry producing low volumes of a particular quality for specialized markets was in relative terms (ie cost per tonne) considerably more costly to operate than a large quarry.

Third party views and evidence

31. Although there are no examples of new quarries, refiners or plants in recent times that we can refer to for comparison, we were told by Goonvean Holdings that the rebuild of the Greensplat refiner and dryer plant (on an adjacent plot to the existing plant) was estimated to cost in the region of £15–£20 million (including an increase in processing capabilities).
32. Sibelco told us that the success of a mine hinged on maximizing the throughput of kaolin through the production facilities. If a facility was not operating at sufficient output, the business would not generate sufficient funds to cover the significant fixed cost base inherent in a kaolin mining operation. Sibelco also noted that the kaolin business was a difficult business as it operated at high fixed cost and that if capacity was not maximized the operation soon became loss-making or just broke even.

Expansion within the UK kaolin production market

33. There are two ways by which a UK kaolin producer can expand its operations:
- accessing additional kaolin reserves; and
 - increasing production capacity.
34. Additionally, in order for expansion to be likely, the market conditions must also allow for expansion to be economically viable.

35. There have been two significant instances in the last six years where existing market participants have expanded their access to reserves:
- (a) expansion by Imerys to access reserves by opening the Higher Moor pit with kaolin extraction from this site commencing in March 2012; and
 - (b) expansion by Sibelco in 2008 when it entered lease agreements with Imerys to access its reserves in Devon at the Lee Moor and Hemerdon pits. Having gained access to these reserves, Sibelco invested in processing equipment in order to expand its production capacity.
36. There have not been any significant expansions of production capacity (without securing increased reserves) in the last six years. [REDACTED] In the following sections, we set out views and evidence on the Higher Moor and Lee Moor and Hemerdon expansions and the potential for further expansion.

Views of the parties

Higher Moor

37. The Higher Moor project commenced in October 2003 when an Environmental Impact Assessment (EIA) Scoping Request was made to the mineral planning authority (Cornwall Council), which decided that a full Environmental Statement (ES) had to be prepared. The ES application was submitted in March 2005 and subsequently determined in March 2006. The duration of the permission was limited to [REDACTED] (this is when kaolin operations and restoration of the site have to be completed).
38. Planning permission was implemented onsite in 2010 and kaolin extraction commenced in March 2012.
39. The Higher Moor planning permission allowed for the extraction of kaolin, partial backfilling of the pit with kaolin china clay waste and the restoration to a water storage reservoir. The permission covered 17 hectares and in total 2.2 million cubic metres of materials will be moved, of which [REDACTED] tonnes were expected to constitute kaolin. The site was on land already owned freehold by Imerys.
40. Imerys said that the main reason for opening Higher Moor pit was to access kaolin for use as feed (together with kaolin from other pits) in a range of hydrous and calcined kaolin grades. It also improved the balance in Karslake pit between coarse and fine feed materials for use in a range of final products. All material extracted from the Higher Moor pit is processed in the neighbouring Littlejohns pit.
41. Costs incurred by Imerys prior to the initial kaolin development activities onsite were in the range of £[REDACTED] to £[REDACTED] (Imerys already owned the land).
42. Additional costs required in order to enable the extraction of kaolin from the site totalled approximately £[REDACTED]. Imerys said that this pit did not have any of its own processing infrastructure as kaolin was transported to the nearby Littlejohns plant for washing and processing. Accordingly, the significant costs associated with developing entirely new processing infrastructure were not incurred.

Lee Moor and Hemerdon lease agreements

43. Imerys entered into a commercial agreement to grant Sibelco a [REDACTED] lease [REDACTED] Lee Moor pit, [REDACTED] Hemerdon, [REDACTED].

Third party views

Lee Moor and Hemerdon lease agreements

44. Sibelco said that [✂].
45. Sibelco said that the rental price that it paid was set at a level that allowed it to mine the leased pits efficiently.
46. Sibelco told us that [✂].

Potential for further expansion

47. Sibelco was [✂].
48. [Annex 1](#) sets out a table provided by Sibelco that details:
 - (a) products that Sibelco produces that substitute those produced by the parties;
 - (b) products Sibelco believes it could manufacture in theory (and what would be required in terms of processing equipment, access to additional input kaolin and/or additives) to enable this; and
 - (c) products that Sibelco cannot substitute and the reason for this.

Expansion into the tableware market

49. Sibelco stated that it was not focused on high-end tableware that Goonvean and Imerys supplied into. It had the ability to manufacture some tableware products where fired brightness/whiteness was not so important and in some ways these were more akin to some of the sanitaryware products that it supplied.
50. Sibelco noted that in order to enter the tableware market and supply products similar to SP, Grolleg or SSP which Imerys supplied significant investment would be required. Sibelco had no substitutes to these Imerys products and manufacturing a similar product would require investment in:
 - centrifuges (Sibelco currently did not operate any centrifuges);
 - blending plants; and
 - grinding/milling facilities (Sibelco currently did not have any grinding facilities).
51. Sibelco said that to create a substitute for the Imerys tableware products it might also need an additive such as bentonite or a whiter firing kaolin (such as a Maoming kaolin from China).
52. Sibelco also confirmed that its reserves were not suitable for it to create a product that could substitute the Diamond tableware, Diamond porcelain or Diamond star tableware products manufactured by Goonvean.

Expansion into performance minerals

53. Sibelco said that it had certain products that it believed were substitutes for some of the performance-mineral products currently supplied by the parties but that it could not offer a substitute for the full range of products offered by the parties.
54. In order to supply an increased range of performance-mineral products, Sibelco said that it would require additional processing equipment but that it would not be constrained by its reserves. The additional processing equipment required to expand into performance minerals was on a par with the equipment required to enter the tableware market (ie centrifuges, blending plants and grinding equipment). In addition to this, should Sibelco wish to produce a substitute for the Supreme product sold by Imerys, it would require 'fourth stage' hydrocyclones.
55. Sibelco told us that [REDACTED].

Our assessment

Costs of expansion

56. We note that expanding access to reserves is significantly cheaper than entering the market as a new participant as economies of scale can be exploited (such as existing processing equipment). This is evident with reference to the Higher Moor pit as excess capacity at the Littlejohns plant was used.
57. In the case of the Higher Moor pit, the costs of expansion were minimized as Imerys already owned the land. If the land was not already owned, the purchase of this would give rise to an additional cost. The price of the land is likely to vary significantly depending on the nature and attitude of the vendor and the nature and reserves of kaolin on the site.
58. We are aware of [REDACTED] previously worked sites currently owned by Imerys and [REDACTED] that are currently owned by Goonvean. We note that seeking planning permission for the Higher Moor pit took about [REDACTED] from start to finish. This is likely to be a significant barrier to expansion for new sites.
59. In relation to the lease of Lee Moor and Hemerdon, we note that Sibelco had pre-existing adjacent pits and as such could negotiate with Imerys in order to access the sterilized clay on the boundary between the two parties. Sibelco had processing plant and equipment already installed at its Devon locations and therefore was able to lease pits from Imerys and increase the use of these to benefit from economies of scale.

Timescale for expansion

60. We note that the timescale associated with entering an agreement to lease an active pit is far more flexible than that of acquiring access to sites that have mothballed or greenfield sites that have no planning permission, infrastructure or plant etc. The evidence suggests that expanding production and access to reserves is considerably easier than creating an operation from scratch but still faces constraints. For example, whilst Sibelco could increase its access to reserves adjacent to its pits by leasing land from Imerys, there may not be further mutually beneficial instances where such an agreement could be struck.
61. We are aware of potential Imerys sites and potential Goonvean sites that are currently covered by existing planning consents and as such are thought to be more

likely than sites without planning permission to be mined in future should expansion into these sites become economically viable.

Substitute products that Sibelco could supply and products it cannot substitute (and rationale for this)



Efficiencies

Introduction

1. This appendix sets out the proposed efficiencies submitted by the parties.

Proposed efficiencies submitted by parties

2. Imerys submitted a report by AlixPartners, dated 11 June 2013 (AlixPartners' report), which sets out proposed efficiencies from the merger.
3. The report describes:
 - (a) an increase of £[x] million per year in Goonvean's annual profits, comprising £[x] million in variable production costs savings, £[x] million in fixed production cost savings and £[x] million in overheads savings (less a reduction in net sales revenue of £[x] million); and
 - (b) a further £[x] million per year of synergies at Imerys, comprising (i) £[x] million in commercial development in IML and (ii) £[x] million savings in mining costs.
4. Table 1 sets out the breakdown in these savings.

TABLE 1 Proposed efficiencies submitted by parties

		£ million		
		Goonvean 2013 budget	Difference from merger	2014 fully integrated Goonvean
<i>Benefits accruing in Goonvean</i>				
A	Sales ('000 tonnes)	[x]	[x]	[x]
B	Net sales revenue	[x]	[x]	[x]
C	Variable production costs	[x]	[x]	[x]
D	Fixed production costs	[x]	[x]	[x]
E=C+D	Total production costs	[x]	[x]	[x]
F=E/A	Production costs per tonne (£/t)	[x]	[x]	[x]
G=B+E	Kaolin contribution	[x]	[x]	[x]
H	Overheads	[x]	[x]	[x]
I=G+H	Operating income	[x]	[x]	[x]
<i>Benefits accruing in Imerys</i>				
J	Commercial development in IML		[x]	
K	Savings in mining costs		[x]	
L=J+K	Total Imerys synergies		[x]	
M=I+L	Total synergies		[x]	

Source: AlixPartners' report.

Variable cost savings

5. The parties submitted that they would make £[x] million in variable cost savings amounting to: [x].
6. AlixPartners' report also mentioned savings in [x], but these were not quantified.

'Fixed' production cost savings

7. Of the £[X] million in 'fixed' production cost savings, AlixPartners argued that labour costs of workers in the pits and other facilities were direct costs of production and should be considered (at least to a degree) variable. It said that the savings in labour costs, amounting to £[X] million, would arise because Imerys could absorb Goonvean's product range within its own operations, thus reducing production costs.

Overhead reductions

8. The parties said that they would be able to eliminate £[X] million of overhead costs reflecting the geographical proximity of the parties' sites, which would also permit the transfer of processing to adjacent facilities and operation of the pits on an integrated basis.

Commercial development in IML

9. Imerys argued that the merger would allow it to save £[X] million by using [X].

Mining cost savings

10. Imerys said that [X]. In addition, it could save a further £[X] million due to [X] pit being easier to extract.

Pass-on to customers

11. AlixPartners said that the merger was 'directly output enhancing' relative to a situation in which Goonvean would exit [X] and would be likely to exit kaolin production entirely in the short term, and would ensure that customers had access to products which they valued over a longer period of time (such as Goonvean's [X] grades, which Imerys could produce without [X]; Imerys grades [X] can continue to be produced [X] and all of Goonvean's product range, which would be lost in the short term [X]). It said that marginal costs would be reduced from £[X] per tonne to £[X] per tonne. Assuming that demand was linear, it said that this would translate into prices that were £[X] per tonne lower than they would be absent the transaction (which it said was a situation in which Goonvean would have had to seek large price increases to mitigate its continuing losses). The parties said that whilst an element of these production costs was fixed, price formation was also influenced by fixed costs because price negotiations were typically at most annual. The parties noted that average prices had tended to reflect trends in production costs, even if only part of the increase in production costs over the last five years had been passed on to customers.

Rivalry enhancing

12. The parties submitted that the merger would enhance their ability to compete with rival suppliers of kaolin and other minerals to serve UK customers in all applications. They said that:
 - (a) The parties would be able to compete with AKW, Sibelco and others for tableware kaolin customers, including by continuing to offer Goonvean's tableware grades; whereas, in their view, the counterfactual was that Goonvean would be [X].

- (b) Imerys would be able to compete more effectively for PPM customers against global competitors, such as Ashapura, [~~3~~].
- (c) Goonvean's life-science grades would continue to be supplied and marketed more aggressively in competition with other materials in light of Imerys's larger sales force.
- (d) Imerys would be better placed to compete with international competitors for sales of calcined kaolin to UK and international customers.
- (e) Cost reductions would mean that Imerys would be better placed to compete for paper-filler, sanitaryware and CPM customers against Sibelco, imports and other minerals.
- (f) The parties would be able to compete more effectively across all applications in competitive exports markets, allowing them to sustain UK kaolin production for all of their customers, including those in the UK.

Secondary aggregates

Introduction

1. This appendix sets out our analysis of the impact of the merger on the supply of secondary aggregates feedstock.
2. This appendix is structured as follows:
 - (a) background section;
 - (b) suppliers;
 - (c) commercial agreements;
 - (d) excess supply and cost of tipping;
 - (e) agreement between Imerys and GAL; and
 - (f) entry.

Background

3. Secondary aggregates feedstock is a by-product of kaolin production. Each tonne of marketable kaolin recovered typically produces up to 9 tonnes of other material, comprising approximately 4 tonnes of sand, 3 tonnes of rock (stent), 1 tonne of overburden and 1 tonne of micaceous residues (mica).¹
4. Part of this kaolin waste can be processed into secondary aggregates. From a production of approximately 9 million tonnes of kaolin waste, up to 6.75 million tonnes (75 per cent) of this waste could be suitable as a feed for the production of secondary aggregates (secondary aggregates feedstock). We were told that whilst the mica currently had little commercial value, the rock and sand material was processed by crushing, screening into single size and graded aggregates, specification (construction) fills and non-specification fills and processed sands.
5. Secondary aggregates are used for construction purposes. Following the processing of the by-product, a secondary aggregate is produced for use in [redacted].

Suppliers

6. Imerys, Goonvean and Sibelco are the only generators of secondary aggregates feedstock in the South-West of England.
7. Secondary aggregates feedstock is supplied to downstream secondary aggregates processors, usually under long-term supply agreements. It is processed and sold on to secondary aggregates customers including concrete companies, construction companies and manufacturers of concrete blocks used in house building.

¹ www.bgs.ac.uk/downloads/start.cfm?id=1362.

8. Imerys and Sibelco supply feedstock to third party (independent) processors. All of Goonvean’s feedstock was, pre-merger, supplied to Goonvean’s own secondary aggregates processing facilities. Figure 1 shows the supply relationships pre-merger.

FIGURE 1

Supply chain pre-merger

[REDACTED]

Source: CC.

Note: [REDACTED].

9. Imerys supplies kaolin waste to Aggregate Industries and Brookland Sand and Aggregates (Brookland) under [REDACTED] agreements [REDACTED].^{2,3} In 2012, Imerys’s total volume of kaolin waste produced was [REDACTED] kt, of which [REDACTED] kt was tipped and [REDACTED] kt was sold for processing.
10. Sibelco supplies secondary aggregates feedstock arising from its Devon operations to Aggregate Industries and Tarmac through [REDACTED] agreements. Sibelco said that it produced around [REDACTED] kt a year of total kaolin waste. Of this, around [REDACTED] kt per year was tipped.
11. All aggregate feedstock from Goonvean’s pits was either processed by Goonvean itself (post-merger—GAL) or, if unsuitable, tipped, and this has been the case since 1996.
12. GAL, Aggregate Industries, Brookland and Tarmac are the only suppliers of secondary aggregates in the South-West area. They supply secondary aggregates primarily to manufacturers of concrete products.
13. Table 1 shows the market shares for Imerys, Goonvean and Sibelco in the production of total kaolin waste and the supply of feedstock in Cornwall and Devon.⁴

TABLE 1 Market shares in relation to kaolin waste, 2012

	<i>Imerys</i>	<i>Goonvean</i>	<i>Sibelco</i>	<i>Cornwall</i>	<i>Cornwall & Devon</i>
Total waste (kt)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Feedstock production (kt)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Feedstock sold externally (kt)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total waste (%)	[80–90]	[5–10]	[5–10]		
Feedstock production (%)	[70–80]	[10–20]	[0–10]		
Feedstock sold externally (%)	[80–90]	-	[10–20]		

Source: Parties’ data and CC calculations.

² Imerys was also supplying kaolin waste [REDACTED] to Atlantic Aggregates, a regional heavy building materials company which supplied secondary aggregates in Cornwall and Devon. Aggregate Industries acquired Atlantic Aggregates in 2008 and the OFT accepted the proposed undertakings in lieu of a reference which came into effect from March 2010. As a result of the undertakings, Atlantic’s Gunheath operations were purchased by Brookland.

³ The Brookland Agreement was extended [REDACTED].

⁴ Imerys told us that the feedstock produced was the demand for feedstock generated by Imerys and that more feedstock could have been supplied from the total waste had there been a demand for it from secondary aggregates processors.

Commercial agreements

14. The supply of secondary aggregates feedstock in Cornwall pre-merger was mainly governed by [REDACTED] arrangements [REDACTED]. Imerys explained that the rationale [REDACTED].
15. Imerys's contracts [REDACTED].
16. Sibelco has [REDACTED] agreements with Aggregate Industries and Tarmac for the supply of secondary aggregates [REDACTED]. As noted above, Goonvean self-supplied prior to the merger.

Excess supply and cost of tipping

17. Imerys tipped between [REDACTED] and [REDACTED] per cent of its total kaolin waste between 2008 and 2010 while Goonvean for the same period tipped between [REDACTED] and [REDACTED] per cent of its total kaolin waste.
18. Imerys provided data on the operational costs of tipping kaolin waste and of transporting it to aggregates processors.⁵ Imerys's operational cost of tipping one tonne of kaolin waste was £[REDACTED] in 2012. This compares to an estimated margin on feedstock of £[REDACTED] per tonne.⁶
19. Sibelco said that it tipped kaolin waste at around £[REDACTED] per tonne. Goonvean told us that the costs of a mobile plant of an individual pit, which included the costs of transporting materials to a tip, were likely to be in the region of £[REDACTED] per tonne.

Agreement between Imerys and GAL

20. The transaction between the main parties does not include Goonvean's secondary aggregates business, which has been retained by GHL. It will operate through GAL.
21. [REDACTED]
22. Imerys submitted that it would have the incentives to continue supplying feed material post-merger to secondary aggregates producers other than GAL due to its large excess supply of kaolin waste and the transporting and tipping costs associated with storing this waste and revenue generation from selling it.

Entry

23. Wolf Minerals has acquired a 40-year lease to the project and plans to develop a large-scale open-pit tungsten mining operation in Devon (Hemerdon). It told us that it expected to start producing tungsten in early 2015. It said that while the soft granite which would initially be extracted was similar to the material used as secondary aggregates feedstock, it had limited application, and that at greater depths there was harder granite which was better quality than soft granite and would be suited to more applications (eg for road building).
24. Imerys considered that the tungsten quarry would shortly become a significant competitor in the supply of secondary aggregates feedstock in the South-West, which would result in a reduction in the price of secondary aggregates feedstock.

⁵ Our understanding is that the operational costs refer to transport costs either to tips or to secondary aggregates processors.

⁶ [REDACTED]

25. Processors had mixed views:

- (a) [X] told us that Wolf Minerals' tungsten quarry might provide a reasonable fill material and possibly a small amount of single size and graded aggregates. However, [X] believed that the sand material would not be suitable for concrete and other performance products as they were likely to contain sulphides and arsenic.
- (b) Brookland believed that until the Hemerdon quarry extraction became fairly deep, an acceptable source of aggregates would not be available. According to Brookland, previous aggregates were sourced when Hemerdon was operated as a mine and from levels much deeper than the proposed opencast operation. Brookland believed that once levels that could sustain acceptable aggregates had been reached, the product would be well sought after.

Detailed specification of the price control remedy and other supporting information

1. The purpose of this appendix is to set out the detailed terms of the price control remedy which will form the basis of drafting the final undertakings (or order). This appendix should be read in conjunction with Section 9 of the final report. The appendix also sets out the mechanism for transition to alternative grades and the dispute resolution process, where necessary.

Parties subject to the remedy

2. The remedy will be binding on Imerys SA and all its subsidiaries, including for the avoidance of doubt Imerys Minerals Limited (Imerys).

Duration

3. The remedy will expire on 31 December 2018.

Controlled products

4. The price control shall apply to the following grades ('controlled products'):
 - (a) Imerys products: Speswhite, Polwhite B, Polwhite E, Devolite, and Polysperse 50; and
 - (b) Goonvean products: Crystal Sheen, Opal Alpha, Opal Beta, Opal Gamma, Opal Epsilon, and Opal Rho.
5. Controlled products will also include any replacement grades (see paragraphs 16 to 23).
6. Imerys shall continue to supply the controlled products to each customer covered by the remedy for the duration of the remedy.

Customers covered by the remedy

7. The list of customers of Imerys and Goonvean covered by the remedy will be as identified in the tables in the annex to this appendix. These lists will be verified by the Monitoring Trustee and amended if necessary. They will be attached to the final undertakings (order).

Prices for controlled products

8. Price is defined as the ex-works price per unit tonne.
9. Prices of controlled products will not increase above the 'base prices' (see paragraph 9) before 31 December 2015.
10. Prices of controlled products in each of the years commencing 1 January 2016 to 31 January 2018 (ie the year ending 31 December 2018) inclusive, will not increase

by more than RPI minus 0.5 per cent. RPI shall be set according to the percentage increase in the RPI index over the 12-month period using the July RPI index values.

11. The base prices for the purposes of the price control remedy are those agreed following the October 2012 negotiations and applying in 2013 (see the tables in Annex 1 to this appendix). Details of the base prices for each customer covered by the remedy will be verified by the Monitoring Trustee and attached to the final undertakings (or order) but will be redacted from the published draft and final versions due to commercial confidentiality.
12. For the duration of the price control, the ex-works price for each customer and grade will be calculated by deducting any third party delivery costs incurred by Imerys in supplying customers on a delivered basis. Imerys will continue to offer to supply customers on a delivered basis, and will pass on any third party delivery costs without applying any mark-up, where the customer chooses a delivered price, in the following way:
 - (a) at the start of each calendar year, Imerys will select its primary haulier for the freight services through its normal tender process. Imerys will negotiate with its primary haulier and obtain a quote for the required freight services;
 - (b) Imerys will inform each customer of the freight quote obtained and undertake to supply the products on a delivered basis, calculated on the basis of the controlled ex-works price plus the freight quote obtained, capped for that calendar year;
 - (c) any increased freight costs during the year resulting from unforeseen freight issues will be absorbed by Imerys, save for any fuel costs which are above a 5 per cent change in the base fuel price set out in Imerys's fuel contracts. In such circumstances, the increment above 5 per cent may be passed on to customers; any decreases in fuel costs greater than the 5 per cent change in the base fuel price should be passed on to customers as a rebate; and
 - (d) the quotation and subsequent invoices for freight services will be available on request to the customer as evidence of the third party delivery costs.
13. Customers shall be entitled to purchase on an ex-works basis if they arrange and pay for their own deliveries, for example, if the customer considers that it can achieve a more competitive price for freight than the quote obtained by Imerys.
14. Energy surcharges will not be applied to sales of the controlled products for the duration of the remedy.

Volumes of controlled products

15. For each controlled product, Imerys will supply each customer of each grade with a maximum annual volume equal to the highest annual UK purchase volume of that customer for that grade in 2009/10, 2010/11 and 2011/12, plus 10 per cent.

Other obligations on Imerys

16. Imerys will maintain all other terms and conditions of supply to each individual customer of Imerys and Goonvean (such as delivery and payment terms and rebates) as they relate to the controlled prices (ie the terms and conditions applying in 2013 following the October 2012 negotiations) for the duration of the remedy, save

where these are amended to reflect the terms of the price control remedy. These terms and conditions will also be appended to the final undertakings (or order).

Transition to alternative grades

17. Imerys shall provide the customer with at least 12 months' prior notice of its intention to supply an alternative performance-mineral grade (the replacement grade) to the controlled product used by the customer as listed in Annex 1 to this appendix, such notice not to expire before 1 January 2016. For the avoidance of doubt, this means that no customer shall have to accept a replacement grade before January 2016.
18. As soon as the appropriate 12 months' written notice has been given to the customer, Imerys will propose, for the customer's agreement, suitable specifications and targets, based on the existing Goonvean or Imerys grade, to enable Imerys to provide a suitable replacement grade. Imerys shall work with the customer to ensure that the replacement grade meets the customer's reasonable requirements and is a suitable replacement grade.

Reformulation work

19. As well as the reformulation work set out in paragraphs 20 to 22, customers can undertake their own testing of the proposed replacement grade. Imerys will provide up to 5 tonnes of each replacement grade (test volumes) free of charge to enable testing and reformulation. Imerys shall not unreasonably withhold test volumes to allow customer testing to occur.
20. Imerys will not charge the customer for any reformulation work carried out by Imerys's employees or in Imerys's facilities.
21. Reformulation work carried out by Imerys shall be undertaken on the basis that the customer provides all relevant information as agreed between the parties to enable Imerys to assist it, including details of its existing formulation, critical parameters including historical/acceptable variations of these, preparation methods and test methods. To enable reformulation work, the customer would also need to provide Imerys with any non-standard materials in its formulations (ie any materials which Imerys cannot obtain on the open market).
22. This reformulation work shall include:
 - (a) theoretical analysis of new product requirements on the basis of physical and chemical properties of the product in light of information provided by the customer on the performance-mineral application to be served;
 - (b) production and laboratory testing of the product in a formulation provided by the customer, where Imerys has the facilities and methodology to carry out such tests;
 - (c) following agreement on a successful laboratory trial and where appropriate, conducting pilot plant trials to produce industrial quantities of a proposed replacement grade for industrial trials by the customer; and
 - (d) if requested by the customer, providing technical assistance in trials of the new formulations conducted by the customer at its own sites.

Completion of transition to replacement grade

23. Having identified a suitable replacement grade (following the steps outlined in paragraphs 16 to 21 above) which Imerys reasonably considers is a suitable replacement for the customer, Imerys shall give written notice to the customer that it considers the proposed replacement grade to be a suitable replacement for the relevant application. In the event that the customer does not agree that the replacement grade proposed by Imerys is a suitable replacement, Imerys or the customer may refer the dispute for determination to an expert agreed between them (the Independent Expert) or where no agreement can be reached, the OFT (or from 1 April 2014, the CMA) shall appoint an Independent Expert. In these circumstances, the dispute resolution mechanism set out in paragraphs 24 to 33 shall apply. Imerys and the customer shall endeavour to resolve all matters in dispute as soon as reasonably practicable.
24. From the date on which the customer agrees or, in the event of a dispute, three months after the Independent Expert has determined that the proposed replacement grade is a suitable replacement (as per the process in paragraphs 24 to 33), the price control remedy will apply to the replacement grade (based on the price of the original controlled product) and would no longer apply to the customer's existing controlled product.

Dispute resolution process

25. Where a dispute is raised, an Independent Expert would be appointed, paid for by Imerys, and would assess whether the proposed replacement grade would be sufficient to meet the customer's requirements.
26. As a minimum, the instructions given to the Independent Expert shall include:
 - (a) the specification of the customer's existing controlled product;
 - (b) the specification of the proposed replacement grade;
 - (c) the specific issues/concerns arising in connection with the specification of the proposed replacement grade which give rise to the dispute as to the suitability of the proposed grade as a replacement grade; and
 - (d) the customer's documentation and records of the performance history of the existing controlled product.
27. The Independent Expert shall test samples of the proposed replacement grade. The Independent Expert will be required to determine in its reasonable professional opinion whether the proposed replacement grade is a suitable replacement for the existing controlled product for the relevant application in which it is used by the customer, having regard to the following factors:
 - (a) the extent to which the proposed replacement grade is consistent with the relevant specifications and targets supplied by the customer agreed with Imerys in the initial stages of the reformulation process; and
 - (b) whether the proposed replacement grade is suitable to meet the customer's requirements in the relevant performance-mineral applications.
28. The Independent Expert will be expected to reach a decision within two months of the date on which the Independent Expert is appointed.

29. In making such determination the Independent Expert shall act as an expert and not as an arbitrator and the decision of the Independent Expert shall be final only as it applies to Imerys.
30. Where the Independent Expert agrees that the proposed replacement grade is a suitable replacement for the controlled product for the relevant application in which it is used by the customer, Imerys is entitled to serve notice on the customer giving it reasonable notice (not less than 3 months) that it will discontinue the supply of the existing controlled grade in favour of the replacement grade unless the customer chooses to switch to an alternative supplier.

Informing customers of the remedy

31. Within two weeks of the CC accepting final undertakings from Imerys, or of the CC making an order, Imerys shall write to each customer benefiting from the remedy. This letter shall include the text of the agreed final undertakings or order and would specify for each grade purchased by that customer the controlled ex-works base price and the maximum annual volume available to the customer under the remedy. The CC intends to contact customers covered by the remedy during the remedy implementation phase to ensure that each customer is aware of its relevant controlled products, base price and volumes.

Supporting information—changes in prices between 2012 and 2013

32. Figure 1 shows the change in prices for relevant Imerys products between 2012 and 2013. Figure 2 shows the changes in prices for relevant Goonvean products between 2012 and 2013. This analysis supports paragraph 9.76 of the main report.

FIGURE 1



FIGURE 2



Customers and prices

1. The tables below set out the price and volume data from Imerys and Goonvean for the relevant performance-mineral customers. The Monitoring Trustee will be required to verify the relevant information.

TABLE 1 [REDACTED]

[REDACTED]

TABLE 2 [REDACTED]

[REDACTED]

Glossary

AKW	Amberger Kaolinwerke, a kaolin producer based in Germany. It is part of Quarzwerke Group.
Ball clay	Sedimentary clay typically consisting of 20–80 per cent kaolinite, 10–25 per cent mica and 6–65 per cent quartz. Can be used as an alternative to kaolin in a number of applications.
BASF	BASF plc, a multinational chemical company.
BGS	British Geological Survey.
BPLK	A Goonvean kaolin grade used in life-science applications .
Brookland	Brookland Sand and Aggregates Limited, a producer of secondary aggregates.
Carbonates	See GCC and PCC .
CC	Competition Commission.
Ceramic body	A mixture of minerals used for the production of sanitaryware and tableware.
CMP	Commodity mineral processing.
CPM	Commodity performance-mineral applications.
Crystal Sheen	A Goonvean kaolin grade.
Diamond Blend	A Goonvean kaolin grade.
Diamond DP Plus	A Goonvean kaolin grade.
Diamond DTC	A Goonvean kaolin grade.
Diamond Porcelain	A Goonvean kaolin grade.
Diamond Star	A Goonvean kaolin grade.
Diamond Swift	A Goonvean kaolin grade.
Diamond Tableware	A Goonvean kaolin grade.
Dolomite firing	A processing technique at very high temperatures.
DTW	Diamond Tableware .
EBITDA	Earnings before interest, tax, depreciation and amortization.
ECC	English China Clays PLC, a mining company acquired by Imetal (now Imerys) in 1999.
ECESA	Explotaciones Ceramicas Espanolas SA.

EEA	European Economic Area.
FEMAS	Feed Materials Assurance Scheme, an accreditation scheme for the supply of kaolin products into animal feeds and enzyme applications.
Furlong	Furlong Mills Ltd.
G1	An internal classification of kaolin deposit used by Goonvean .
GAL	Goonvean Aggregates Limited (formerly St Stephen Limited).
GCC	Ground calcium carbonate, an alternative to kaolin in paper-filler and performance-mineral applications. GCC is widely used as a low-cost paper filler in neutral/alkaline paper manufacturing processes as well as in performance-mineral applications to increase pigment volume concentration in paints/coatings.
GCM	Global Ceramic Materials Ltd, a tableware producer.
GHL	Goonvean Holdings Limited.
Goonvean	Goonvean Limited.
Grolleg	An Imerys kaolin grade.
IBC	Intermediate bulk container (typically 1 tonne).
ILC	Industrial Latex Compounds Limited.
Imerys	Imerys Minerals Limited SA.
Intrafill 60	An Imerys kaolin grade.
Kaolin	Commonly referred to as china clay, kaolin is a soft, earthy, usually white mineral, which remains chemically inert over a wide pH range, and is formed over many millions of years by the hydrothermal decomposition of granite rocks.
Longyan	Longyan Kaolin Clay Co, a Chinese kaolin producer.
Life-science applications	Applications such as pharmaceuticals, crop protection and animal feed.
Molochite	A type of kaolin produced by Imerys.
MS	Magnesium silicate (also known as talc).
NSC	An Imerys kaolin grade.
OFT	Office of Fair Trading.
Opal Beta	A Goonvean kaolin grade.
Opal Gamma	A Goonvean kaolin grade.

Opal Omega	A Goonvean kaolin grade.
Opal Sigma	A Goonvean kaolin grade.
Opex	Operating expenditure.
PCC	Precipitated calcium carbonate. See also GCC .
Platinum SC	A Goonvean kaolin grade.
Polwhite B	An Imerys kaolin grade.
Polwhite E	An Imerys kaolin grade.
PPM	Premium performance-mineral applications.
Puraflo	A Sibelco kaolin grade.
PVA	Polyvinyl acetate.
Refractory	Resistant to heat.
RBH	Richard Baker Harrison Limited, a distributor of minerals.
RCF	Refractory Ceramic Fibre made from fused alumina and silica or kaolin for use up to 1,260°C, or with added zirconia for use up to 1,425°C.
SLC	Substantial lessening of competition.
Soka	Société Kaolinière Américaine, a producer of minerals.
Speswhite	An Imerys kaolin grade.
SP	Standard Porcelain, an Imerys kaolin grade.
SSP	Super Standard Porcelain, an Imerys kaolin grade.
SSNIP	Small but significant and non-transitory increase in price.
Supreme	An Imerys kaolin grade.
SW	Sanitaryware.
ToH	Theory of harm.
Treviscoe	An Imerys kaolin grade.