

## AGGREGATES, CEMENT AND READY-MIX CONCRETE MARKET INVESTIGATION

### Cross-sales in bulk cement

#### Introduction and summary

1. In this working paper we analyse the extent to which the five major vertically-integrated producers of construction materials in the UK ((the Majors) ie Cemex UK Operations Limited (Cemex), Hanson, Lafarge Aggregates Limited and Lafarge Cement UK Limited (together Lafarge), Tarmac Group Limited (Tarmac), and Aggregate Industries<sup>1</sup>) buy and sell cement to each other (so called ‘cross-sales’).
  
2. We assess cross-sales as part of our analysis of the coordinated effects theory of harm for cement. There are several possible ways in which cross-sales may facilitate coordination. The existence of customer/supplier relations between the Majors may facilitate information exchange between the Majors<sup>2</sup> and increase transparency in prices of cement. Cross-sales may also be a tool used by the Majors to signal to each other, or a mechanism by which the Majors can punish each other. In particular, existence of (non-negligible) cross-sales makes repatriation<sup>3</sup> between the Majors possible, which can be used, on a smaller scale, as a signal that a deviation has been detected, or, on a larger scale, as a punishment for each of the other Majors with which there are cross-sales relationships. Finally, cross-sales could also be used as a tool for side-payments between the majors.
  
3. In this note, we review the evidence on cross-sales of cement,<sup>4</sup> and in particular:
  - (a) for each of the Majors, which cement suppliers it purchases from and sells to;

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<sup>1</sup> Aggregate Industries does not produce cement.

<sup>2</sup> See Competition Commission (CC) [Draft guidelines for market investigations](#), paragraphs 253–255.

<sup>3</sup> Repatriation occurs when a cement producer brings cement volumes purchased from another producer back into in-house supply.

<sup>4</sup> The Majors also sell aggregates, RMX and asphalt to each other, although these cross-sales are beyond the scope of this working paper.

(b) how cross-sales balance out between the Majors, and which Majors are net purchasers/net sellers of cement; and

(c) whether there have been any trends in cross-sales over time.

4. We find that:

(a) the Majors have historically bought and sold significant amounts of cement from each other;

(b) [REDACTED], [REDACTED] and [REDACTED] appear to be predominantly net sellers of cement, while [REDACTED] and [REDACTED] are net buyers across the period 2007 to 2011 (2008 to 2011 in the case of [REDACTED]);

(c) there can be significant variation in the prices charged to each Major, with [REDACTED]; while [REDACTED] Majors often pay higher prices than the independents;

(d) there can be significant variation between the average delivery distances to each Major, with some Majors delivering cement further to Majors than to independents (on average); and

(e) there has been a shift in the Majors' purchases from each other over the period 2007 to 2011 towards greater self-supply, apart from in areas where logistics imply that purchases from other Majors may be more economical.

#### **Rationale for cross-sales**

5. Lafarge told us that it did not consider transactions with other Majors to be cross-sales arrangements or agreements, and that it considered that use of the term 'cross-sale' denoted some form of conditionality between the transactions. Aggregate Industries also told us that it made no cross-sales of cement, where cross-sales were defined as sales dependent upon reciprocal supply. For the purposes of our analysis, we term all sales and purchases between Majors 'cross-sales'.

6. We understand that there are three main rationales for which the Majors purchase cement from each other:
- (a) if a producer of cement has a shortfall of inputs in a particular location—Lafarge told us that these types of cross-sales were usually supplied as a matter of short-term expediency during product shortages in periods of high demand;
  - (b) for logistical reasons, where there are transport cost savings, ie when a Major's RMX or other concrete operation is located closer to a competitor's cement plant, it may be cheaper to source from the competitors' plant than from its own plant; and
  - (c) when a producer of cement does not have the capacity to self-supply its RMX operations.

### **Cross-sales as proportion of external sales**

7. The Majors have historically sold to, and/or bought from, each other significant amounts of cement (as a proportion of external sales), as shown in Figures 1 to 5.<sup>5</sup> However, cross-sales have fallen over time, mainly driven by the Majors' self-supply strategies.
8. Lafarge told us that the volume of cement sales between Majors had significantly reduced since 2007 in response to the downturn in economic activity/demand and as Major producers had pursued self-supply strategies and increased vertical integration.
9. Hanson told us that the majority of its sales to other Majors were made to [REDACTED], and that there was [REDACTED] over the period 2007 to 2011, as [REDACTED]. Hanson also told us that its

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<sup>5</sup> We note that Aggregate Industries has not sold much cement to other Majors historically, but it has purchased significant amounts of cement from other Majors over the period in question.

purchases from other Majors were predominantly from [REDACTED], and that [REDACTED] in 2009 as a consequence of HeidelbergCement's acquisition of Hanson in 2007.

10. Cemex told us that its RMX Division has made fewer purchases from [REDACTED] in recent years, and that it had moved to taking larger internal volumes from Cemex Cement, and from [REDACTED], which has reduced logistics costs.

FIGURE 1

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

[REDACTED]

Source: Cemex data and CC analysis.

FIGURE 2

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

[REDACTED]

Source: Hanson data and CC analysis.

FIGURE 3

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

[REDACTED]

Source: Lafarge data and CC analysis.

FIGURE 4

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

[REDACTED]

Source: Tarmac data and CC analysis.

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

FIGURE 5

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

[REDACTED]

Note: [REDACTED].

Source: Aggregate Industries data and CC analysis.

## Value of cross-sales between the Majors

11. Figures 6 to 11 show the value of cross-sales between each pair of Majors which produce cement in the UK. From the figures we observe that Cemex is a net buyer of cement from [X] (Figure 6) and [X] (Figure 7) and a net seller of cement to [X] (Figure 8). Hanson is a net seller of cement to [X] (Figure 6) and [X] (Figure 10) and a net buyer of cement from [X] (Figure 9). [X] (Figure 11). Tarmac is a net buyer of cement from all other Majors, and it did not sell any cement to [X], and it sold very small amounts of cement to [X] in Q4 2007 and Q4 2010.

FIGURE 6

### Sales of bulk cement between Cemex and Hanson

[X]

Source: Cemex and Hanson data and CC analysis.

FIGURE 7

### Sales of bulk cement between Cemex and Lafarge

[X]

Source: Cemex and Lafarge data and CC analysis.

FIGURE 8

### Sales of bulk cement between Cemex and Tarmac

[X]

Source: Cemex and Tarmac data and CC analysis.

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

FIGURE 9

### Sales of bulk cement between Hanson and Lafarge

[X]

Source: Hanson and Lafarge data and CC analysis.

FIGURE 10

### Sales of bulk cement between Hanson and Tarmac

[X]

Source: Hanson and Tarmac data and CC analysis.

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

FIGURE 11

**Sales of bulk cement between Lafarge and Tarmac**



Source: Lafarge and Tarmac data and CC analysis.

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

FIGURE 12

**Sales of bulk cement between Aggregate Industries and Cemex**



Note: Aggregate Industries' data starts in Q1 2008.  
Source: Aggregate Industries and Cemex data and CC analysis.

FIGURE 13

**Sales of bulk cement between Aggregate Industries and Hanson**



Source: Aggregate Industries and Hanson data and CC analysis.  
Note: Aggregate Industries' data starts in Q1 2008.

FIGURE 14

**Sales of bulk cement between Aggregate Industries and Lafarge**



Source: Aggregate Industries and Lafarge data and CC analysis.  
Note: Aggregate Industries' data starts in Q1 2008.

FIGURE 15

**Sales of bulk cement between Aggregate Industries and Tarmac**



Source: Aggregate Industries and Tarmac data and CC analysis.  
Note: Aggregate Industries' data starts in Q1 2008. Tarmac's revenues are net of rebates, which Tarmac provided separately.

13. In addition to Transaction data, which was used to produce the above charts, the Majors also provided us with annual summaries of their sales to and purchases from

each other Major in response to the Market Questionnaire. This data is presented in Tables 1 to 5 below. This data does not always match that provided in the Transaction Data for bulk cement. The Majors told us that this could be due to differences in the way Transaction data and purchasing data were recorded and held. In particular, Tarmac told us that data provided by other Majors could include Tarmac Building Products, which was not included in Tarmac's data. Hanson told us that discrepancies could occur as a result of different company percentage definitions or other company groupings, or different treatment of credits or other corrections, or miscoding or other data entry errors. Lafarge has told us that its purchasing data was not as inherently accurate as its sales data, and to the extent there were discrepancies between Lafarge's purchasing data and other suppliers' sales data, Lafarge suggested that sales-side data was more accurate. Cemex told us that its Transaction data did not capture purchases of cement by its Cement business (only the RMX business); Castle Cement was not recognized in the data as part of Hanson, and therefore Hanson figures appeared lower than was actually the case; and some slag purchases by Cemex may have been classed as purchases of cement.

14. Table 1 shows Cemex's annual sales and purchases to other Majors. In addition, we also calculate net sales (ie sales less purchases) to each other Major. As the table shows, Cemex was [✂] across most of the period 2007 to 2011.

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

[✂]

Source: Response to Transaction data request and CC calculations.

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\*2007 data starts on 1 February 2007.

15. Table 2 shows Hanson's annual sales and purchases to other Majors. In addition, we also calculate net sales (ie sales less purchases) to each other Major. As the table

shows, Hanson was [REDACTED] across most of the period 2007 to 2011, and [REDACTED] across the same period.

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

[REDACTED]

Source: Response to MQ and CC calculations.

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16. Table 3 shows Lafarge's annual sales and purchases to other Majors. In addition, we also calculate net sales (ie sales less purchases) to each other Major. As the table shows, Lafarge was [REDACTED] across the period 2007 to 2011.

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

[REDACTED]

Source: Response to MQ and CC calculations.

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

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

[REDACTED]

Source: Response to MQ and CC calculations.

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

18. Table 5 shows Aggregate Industries' annual sales and purchases to other Majors. In addition, we also calculate net sales (ie sales less purchases) to each other Major.

[REDACTED]

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

[REDACTED]

Source: Response to MQ and CC calculations.

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Note: 2007 data is not available.

## Average prices on cross-sales

19. Next we compare the average prices paid by the Majors to each other, alongside the average prices paid by independent customers to the Majors.<sup>6</sup> As differences in price can be driven by size of customer and the distance over which cement is delivered, we calculate prices controlling for both size of customer and delivery distance.
  
20. The Majors tend to be very large customers for cement, and therefore there are not always many independents making similar-sized cement purchases to use as comparators. Therefore, to control for the size of customers, we compare, for each Major, the average prices charged to other Majors to the average prices charged to the top [x] independent customers of this Major. We allow [x] to differ for each Major, as each Major has a different number of customers. To illustrate this, if we held [x] the same across Majors, for example the top 40 customers for each of them, this would represent [x] per cent of Lafarge's bulk cement customers (by number), as Lafarge has around [x] bulk cement customers, and [x] per cent of Tarmac's bulk cement customers, as Tarmac has around [x] bulk cement customers. Similarly, Lafarge's 40<sup>th</sup> customer (ranked in descending order by volume) purchases approximately [x] tonnes of cement a year (the precise volume varies by year), while Tarmac's 40<sup>th</sup> customer purchases approximately [x] tonnes of cement a year.
  
21. We also considered whether we should set the thresholds for each Major using volumes purchased, ie whether we should compare the prices charged by each Major to other Majors to the prices charged to independent customers who purchased [X] tonnes or more in the year. However, the Majors with greater external cement sales will by default sell greater volumes than the Majors with lower external sales, so we think it is appropriate to allow the threshold to vary for each Major.

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<sup>6</sup> Unless otherwise stated, by prices we mean delivered prices.

22. Therefore, we have analysed the transaction data to devise sensible thresholds for each Major given the number of customers each Major has and the volumes sold by each Major. In light of our analysis, we used the following thresholds for each Major:
- (a) Lafarge—top 45 customers, which represent [X] per cent of annual volumes;
  - (b) Cemex—top 40 customers, which represent [X] per cent of annual volumes;
  - (c) Hanson—top 40 customers, which represent [X] per cent of annual volumes;
- and
- (d) Tarmac—top 30 customers, which represent [X] per cent of annual volumes.<sup>7</sup>
23. This way, we may potentially be capturing some independents which are ‘small’ by some measures (eg in terms of volumes purchased). The aim of this analysis is to understand how the prices charged to other Majors compare with those charged to independents:
- (a) If we find that prices to Majors tend to be lower than those for independents controlling for size, we should bear in mind in the interpretation of the results that some of the independents we are using as a comparator may be materially smaller (in terms of volumes purchased) than the Majors and therefore this may account for some of the difference in prices.
  - (b) If, on the other hand, we find that prices to Majors tend to be higher than those for independents controlling for size, this would be unlikely to be because independents tend to purchase more than the Majors. This would therefore make our analysis more conservative, as it means that our average price for the independents may be somewhat higher than that for the truly large independents (of which there may be too few for averaging). Therefore if we find that the Majors pay higher prices than the independents, it gives us more comfort than that this is a genuine feature of the data.

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<sup>7</sup> Tarmac told us that it is a net purchaser of cement and its business model is focused on self-supply, therefore meaning that it makes external sales only where the margin available is high enough to compensate for having to source additional volumes externally. As a result, Tarmac told us that it had very few independent customers making similar-sized cement purchases.

24. In terms of controlling for delivery distances, we have used two different approaches:
- (a) The first approach uses ex-shipping-point prices, which are pre-delivery to the customer, and therefore these prices are less likely to be related to distance than delivered prices. However, we cannot use this approach for Cemex, as Cemex did not provide data on haulage costs.<sup>8</sup>
  - (b) The second approach is to analyse the distance over which deliveries to larger customers<sup>9</sup> are made, and derive some statistics on the distance over which cement is delivered to large customers by each Major (eg 25<sup>th</sup> percentile, median and 75<sup>th</sup> percentile). This gives a range for each Major of [§] miles for Lafarge<sup>10</sup> and Tarmac,<sup>11</sup> [§] miles for Cemex<sup>12</sup> and [§] miles for Hanson.<sup>13</sup> Individual transactions (both by other Majors, and by larger independents) which have distances outside of these ranges are then dropped from the analysis.<sup>14</sup>
25. Figures 16 to 20 show the delivered prices charged by each Major to the other Majors, as well as to independents, controlled for size of customer and delivery distance (using the approach in 24(b)). The figures show that there can be significant variation in the prices paid by different customers. Annex 2 shows the results of our analysis using the approach in paragraph 24(a).
26. Figure 16 shows Cemex's average delivered prices to other Majors, as well as independents, controlled for size of customer and delivery distance. The chart shows several interesting facts:
- (a) [§]; and

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<sup>8</sup> Ex-shipping-point prices are calculated by subtracting total quarterly haulage costs (for delivery from the shipping point to the customer) from total quarterly revenues, and then dividing by total quarterly volumes.

<sup>9</sup> As defined above in paragraph 22.

<sup>10</sup> [§]

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

<sup>12</sup> The interquartile range is [§] miles on average (ie for all 40 larger customers), though it can be as low as [§] miles, and as high as [§] miles for the Majors. We use a range of [§] for all customers.

<sup>13</sup> The interquartile range is [§] miles on average (ie for all 40 larger customers), though it can be as low as [§] miles, and as high as [§] miles for the Majors. We use a range of [§] for all customers.

<sup>14</sup> We will test how sensitive the analysis is to the distance bands, by repeating the analysis for one or more alternative distance bands.

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

FIGURE 16

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

[X]

Source: Cemex data and CC analysis.

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

(a) The average delivered price paid by Aggregate Industries was [X] paid by independents in [X], and it was [X] by independents for most of the remaining period.

(b) The average delivered price paid by Lafarge was [X] paid by the independents in [X]. [X]

(c) The average delivered prices paid by Cemex are generally [X] paid by the independents. We also observe a [X] paid by Cemex in [X], which is [X].

(d) The average delivered prices paid by Tarmac are [X] paid by the independents for most of the period.

FIGURE 17

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

[X]

Source: Hanson data and CC analysis.

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

(a) The average delivered price paid by Aggregate Industries was [REDACTED].

(b) The average delivered prices paid by [REDACTED].

FIGURE 18

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

[REDACTED]

Source: Lafarge data and CC analysis.

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

(a) The average delivered price paid by [REDACTED] was [REDACTED] the average delivered price paid by independents for most of the period over which we have data.

(b) The average delivered price paid by [REDACTED] is [REDACTED], those paid by the independents across the period over which we have data.

(c) Tarmac did not sell any cement to [REDACTED], and it sold very little cement to [REDACTED] (though at distances falling outside of our control range) across the period in question.

FIGURE 19

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

[REDACTED]

Source: Tarmac data and CC analysis.

Note: Tarmac's revenues which were used to calculate prices are net of rebates, which Tarmac provided separately. These figures may need to be updated as Tarmac has not been able to verify the accuracy.

**Implied revenue differentials**

30. We have calculated the implied revenue differential by deducting the revenue that Majors would have received for cross-sales to other Majors had they used the prices they charged to their independent customers, which we call hypothetical revenue, from their actual revenue from cross-sales to other Majors. We have calculated the

hypothetical revenue by using the average prices charged by the Majors to their larger independent customers controlled for delivery distance (Figures 16 to 19 above). We have assumed that the volumes remain the same in both the actual revenue and hypothetical revenue (ie we have not adjusted volumes when we have used different prices), and that these are equal to the actual volumes purchased by the Major customers controlled for delivery distance (see paragraph 24(b) above).

31. Figure 20 shows the implied revenue differentials for Cemex, split by Major customer. The figure shows that Cemex's actual revenues [✂].

FIGURE 20

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

[✂]

*Source:* Cemex data and CC analysis.

*Note:* Implied revenue differential is the difference between actual revenue and hypothetical revenue, as outlined in paragraph 30.

32. Figure 21 shows the implied revenue differentials for Hanson, split by Major customer. The figure shows that Hanson's actual revenues.

FIGURE 21

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

[✂]

*Source:* Hanson data and CC analysis.

*Note:* Implied revenue differential is the difference between actual revenue and hypothetical revenue, as outlined in paragraph 30.

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

FIGURE 22

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

[✂]

Source: Lafarge data and CC analysis.

Note: [✂].

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

FIGURE 23

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

[✂]

Source: Tarmac data and CC analysis.

Note: Implied revenue differential is the difference between actual revenue and hypothetical revenue, as outlined in paragraph 30. Tarmac's revenues which were used to calculate prices are net of rebates, which Tarmac provided separately.

**RMX plant purchasing data**

35. The Majors also gave us data on purchases of cement by their RMX plants.

**Lafarge**

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

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

38. The figures also suggest that, [✂].

39. [✂]

40. Further, Lafarge told us that [✂].

41. We think that supplying cement from a depot is likely to carry an additional cost penalty compared with supplying from a plant, which is why our analysis focuses on plants.

FIGURE 24

**Lafarge's purchases of cement for downstream use, 2007**

[✂]

Source: Lafarge data and CC analysis.

FIGURE 25

**Lafarge's purchases of cement for downstream use, 2008**

[✂]

Source: Lafarge data and CC analysis.

FIGURE 26

**Lafarge's purchases of cement for downstream use, 2009**

[✂]

Source: Lafarge data and CC analysis.

FIGURE 27

**Lafarge's purchases of cement for downstream use, 2010**

[✂]

Source: Lafarge data and CC analysis.

FIGURE 28

**Lafarge's purchases of cement for downstream use, 2011**



Source: Lafarge data and CC analysis.

**Cemex**

42. Cemex has provided data on purchases of all types of bulk cement (CEM I and non-CEM I) by its RMX plants for the period 2007 to 2011 inclusive, by individual vendor (including Internal sales).
43. Figures 29 to 33 show Cemex's purchases of cement (for downstream use in its RMX plants) for each of the years 2007 to 2011 inclusive, by vendor. Each circle represents an RMX plant, with the sizes of the circles denoting the value of purchases by each plant.<sup>15</sup> As the figures show, Cemex purchased significant amounts of cement externally across the period 2007 to 2011. However, the source of the external purchases has changed over time. Cemex purchased significant amounts of cement from [REDACTED] in 2007 and 2008; this was reduced significantly in 2009 to 2011. Purchases from [REDACTED] increased over time, and became more concentrated in Scotland and Wales, with internal sales in these areas reducing to almost nothing across the period. Purchases from [REDACTED] were very low in 2007 and 2008, increasing significantly in 2009. Cemex also purchased some cement from importers across the period, though these purchases were a low proportion of total purchases.
44. In particular, we can also see that:
- (a) In 2007 and 2008, Cemex was purchasing cement from [REDACTED] and from [REDACTED] although there was a switch to internal purchasing for [REDACTED] in 2008. Therefore it

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<sup>15</sup> Locations are not available for every RMX plant (especially those which do not have a fixed location). These plants predominantly purchased cement internally, with some purchases from [REDACTED] over the period 2007 to 2011.

seems likely that there is a logistics rationale for these purchases. See Annex 3 for a map of the Majors' cement plants in the UK.

(b) In 2009, Cemex switched its purchases in [redacted] away from [redacted] to [redacted], despite [redacted] having plants which appear better located for these areas.

(c) In 2010 and 2011, external purchases by Cemex seem to be broadly in areas where Cemex does not have a nearby plant (in particular, Wales and Scotland). It may be somewhat surprising that Cemex purchases from [redacted] in [redacted] given that [redacted] which are well-located to serve these areas. We think that supplying cement from a depot is likely to carry an additional cost penalty compared with supplying from a plant, which is why our analysis focuses on plants.

FIGURE 29

### **Cemex's purchases of cement for downstream use, 2007**

[redacted]

Source: Cemex data and CC analysis.

FIGURE 30

### **Cemex's purchases of cement for downstream use, 2008**

[redacted]

Source: Cemex data and CC analysis.

FIGURE 31

### **Cemex's purchases of cement for downstream use, 2009**

[redacted]

Source: Cemex data and CC analysis.

FIGURE 32

### **Cemex's purchases of cement for downstream use, 2010**

[redacted]

Source: Cemex data and CC analysis.

FIGURE 33

**Cemex's purchases of cement for downstream use, 2011**



Source: Cemex data and CC analysis.

**Hanson**

45. Hanson has provided data on purchases of cement (although it did not specify whether this is CEM I only, or all types of cement) by its RMX plants for the period Q1 2007 to Q4 2011 inclusive, split into Internal and External purchases. Individual vendors have not been provided in the data. In the data provided by Hanson, purchases from Castle Cement have been treated as internal throughout the 2007 to 2011 period.
46. Figures 34 to 38 show Hanson's purchases of cement (for downstream use in its RMX plants) for each of the years 2007 to 2011 inclusive, by Internal and External purchases. Each circle represents an RMX plant, with the sizes of the circles denoting the value of purchases by each plant.<sup>16</sup> As the figures show, Hanson purchased significant amounts of cement externally across in 2007 and 2008.
47. Hanson has told us that the decrease in its external purchases in 2009 was a natural result of the acquisition by HeidelbergCement of Hanson in 2007, the full effect of which was not felt until 2009.<sup>17</sup>

FIGURE 34

**Hanson's purchases of cement for downstream use, 2007**



Source: Hanson data and CC analysis.

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

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

FIGURE 35

**Hanson's purchases of cement for downstream use, 2008**



Source: Hanson data and CC analysis.

FIGURE 36

**Hanson's purchases of cement for downstream use, 2009**



Source: Hanson data and CC analysis.

FIGURE 37

**Hanson's purchases of cement for downstream use, 2010**



Source: Hanson data and CC analysis.

FIGURE 38

**Hanson's purchases of cement for downstream use, 2011**



Source: Hanson data and CC analysis.

***Tarmac***

48. Tarmac has provided data on purchases of cement (though not specified whether this is CEM I only, or all types of cement) by its RMX plants for the period Q1 2007 to Q4 2011 inclusive, split into Internal and External purchases. Individual vendors have not been provided in the data.
  
49. Figures 39 to 43 show Tarmac's purchases of cement (for downstream use in its RMX plants) for each of the years 2007 to 2011 inclusive, by Internal and External purchases. Each circle represents an RMX plant, with the sizes of the circles denoting the value of purchases by each plant.<sup>18</sup> As the figures show, Tarmac

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

purchased the majority of its cement externally in 2007. Over the period 2007 to 2011, external purchases of cement decreased, while internal purchases increased such that in 2011, Tarmac purchased the majority of its cement internally, while external sales were concentrated in Scotland and south-eastern parts of England.

FIGURE 39

**Tarmac's purchases of cement for downstream use, 2007**



*Source:* Tarmac data and CC analysis.

FIGURE 40

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



*Source:* Tarmac data and CC analysis.

FIGURE 41

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



*Source:* Tarmac data and CC analysis.

FIGURE 42

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



*Source:* Tarmac data and CC analysis.

FIGURE 43

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



*Source:* Tarmac data and CC analysis.

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

FIGURE 1.1

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



*Source:* Cemex data and CC analysis.

FIGURE 1.2

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



*Source:* Hanson data and CC analysis.

FIGURE 1.3

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



*Source:* Lafarge data and CC analysis.

FIGURE 1.4

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



*Source:* Tarmac data and CC analysis.

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

### **Alternative method of controlling prices for customer size and delivery distance**

1. This annex shows ex-shipping-point prices charged by each Major (excluding Cemex, for who we do not have ex-shipping-point prices) to the other Majors, as well as to independents, controlled for size of customer, as mentioned in paragraph 24 above.<sup>19</sup>

FIGURE 2.1

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



*Source:* Hanson data and CC analysis.

FIGURE 2.2

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



*Source:* Lafarge data and CC analysis.

FIGURE 2.3

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



*Source:* Tarmac data and CC analysis.

*Note:* Tarmac's which were used to calculate prices are net of rebates, which Tarmac provided separately. These figures may need to be updated as Tarmac has not been able to verify the accuracy.

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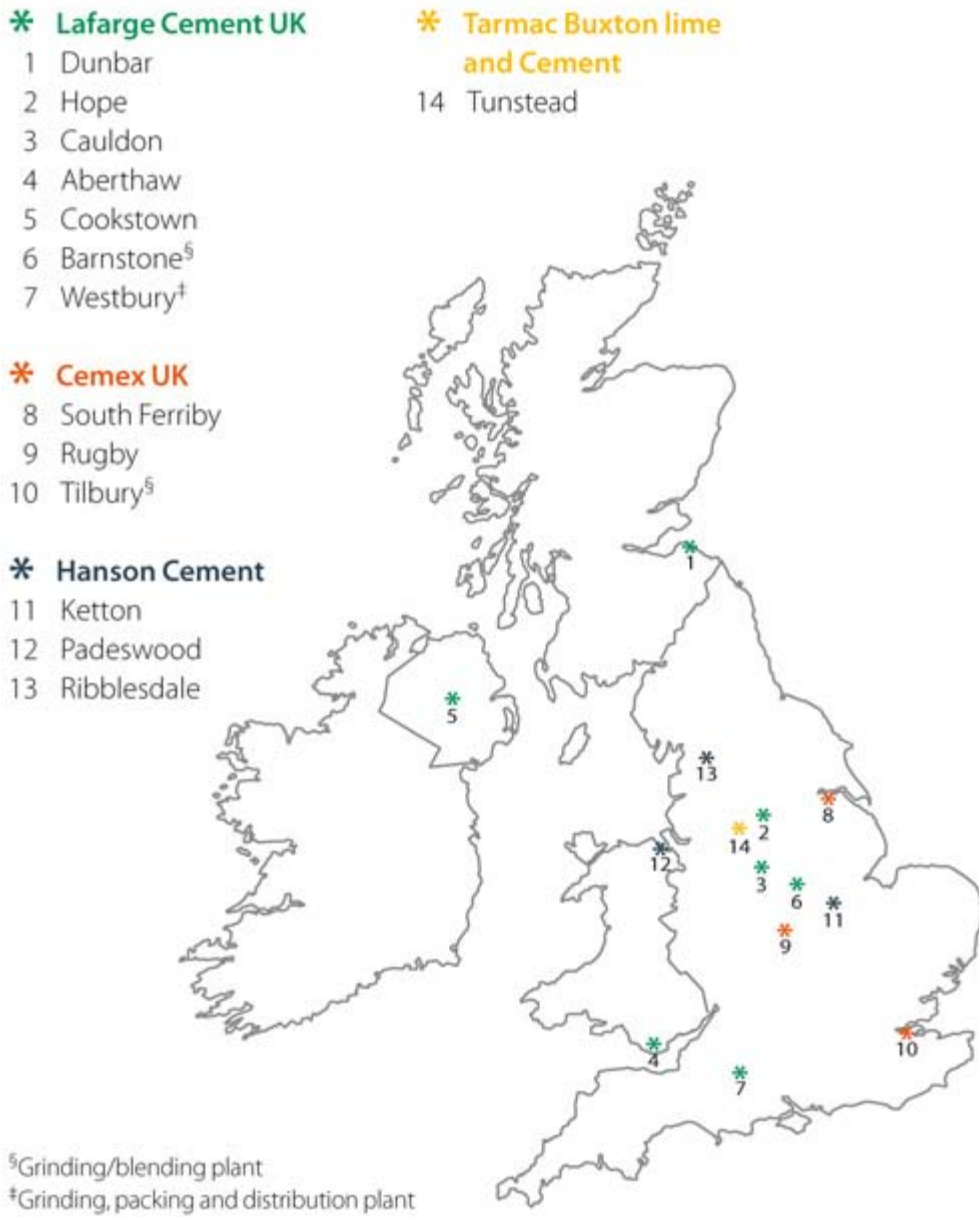
<sup>19</sup> Ex-shipping-point prices are calculated by subtracting total quarterly haulage costs (for delivery from the shipping point to the customer) from total quarterly revenues, and then dividing by total quarterly volumes.

### **Map of the Majors' cement plants in the UK**

1. This annex shows the current locations of the Majors' cement plants (including grinding/blending plants, and grinding, packing and distribution plants) across the UK. Over the period 2007 to 2011, there were two further cement plants in operation: Cemex's Barrington in Cambridgeshire (closed in 2008) and Lafarge's Northfleet just to the east of Greater London (closed in 2008). Several kilns have also been mothballed over this period ([✂]), but this did not change the geographical footprint of the Majors.

FIGURE 3.1

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



Source: MPA website:  
[http://cement.mineralproducts.org/cement/manufacture/location\\_of\\_mpa\\_members\\_cement\\_plants.php](http://cement.mineralproducts.org/cement/manufacture/location_of_mpa_members_cement_plants.php)).