

Summary

The reference

1. On 18 January 2012, the Office of Fair Trading (OFT) referred the supply or acquisition of aggregates, cement and ready-mix concrete (RMX) in Great Britain (GB) to the Competition Commission (CC) for investigation. The reference was made under sections 131 and 133 of the Enterprise Act 2002 (the Act).
2. We are required to decide whether ‘any feature, or combination of features, of each relevant market prevents, restricts or distorts competition in connection with the supply or acquisition of any goods or services in the United Kingdom or a part of the United Kingdom’.¹ If the CC decides that there is such a feature or combination of features, then there is an adverse effect on competition (AEC).² This report sets out our provisional findings based on the evidence we have reviewed and the analysis we have carried out to date. We are required to publish our final report by 17 January 2014.

Provisional findings

3. We did not identify any features giving rise to an AEC in any market in GB for the supply of aggregates or RMX.
4. We found that there was a combination of structural and conduct features that gave rise to an AEC in the GB cement markets through coordination.
5. We also found that one Major’s exclusive agreements with the GB steel producers for the production of granulated blast furnace slag (GBS), and another Major’s exclusive long-term contract with the GBS-producing Major for the purchase of GBS to produce

¹ Section 134(1) of the Act.

² Section 134(2) of the Act.

ground granulated blast furnace slag (GGBS—which can be used as a partial substitute for cement), in combination with both these Majors' participation in the GB cement markets, were further features that gave rise to an AEC in the GB cement markets.

6. The likely effect of these features is higher prices of cement in GB than would otherwise be the case for all GB cement users, whether this cement is ultimately sold through independent RMX and concrete producers, independent merchants or through the downstream businesses of the five largest heavy building materials producers in GB (the Majors).

The reference products

7. Aggregates are the granular base materials used in the construction of roads, buildings and other infrastructure. Aggregates may be divided into:
 - (a) primary aggregates, which are extracted from quarries, pits and (in the case of marine aggregates) the seabed;
 - (b) secondary aggregates, which are by-products of industrial and mining processes; and
 - (c) recycled aggregates, which are produced, for example, from demolition sites and construction waste.
8. Cement is the 'glue' that binds together the components of building materials. Among other uses, cement is mixed with aggregates and water to produce RMX and concrete products (for example, concrete blocks). Cement is made from a mixture of finely ground limestone or chalk (or other materials with a high calcium content), clay and sand (or other sources of silica and alumina), which is heated almost to melting point, creating an intermediate product, cement clinker. The finished cement is

produced by grinding together cement clinker with additives to produce a fine powder. Cement is supplied in bulk or in bags.

9. Different types of cement are produced by blending ground clinker with other materials including GGBS and pulverized fly ash (PFA), a by-product of coal-fired power stations. We refer to these other materials collectively as 'cementitious products'. CEM I (containing less than 5 per cent additives) is the basic, and the most widely produced, cement in Great Britain. CEM II (typically made with PFA) and CEM III (made with GGBS) are the other two main types of cement supplied in the UK.
10. RMX is concrete that is produced in a freshly mixed and unhardened state. RMX is manufactured from cement, aggregates, water and other additives as necessary. RMX can be produced (a) in a fixed plant and distributed to site by a concrete mixer; (b) in a mobile plant at (or near) the customer site (also known as a 'site plant'); or (c) in a volumetric truck which carries the ingredients separately and mixes them on-site (also known as 'on-site batching'). In the UK, most RMX is mixed at a fixed plant then delivered to the customer's site.

Background to the reference

11. In recent years, there have been some significant developments in these markets, which we have taken into account in our investigation.
12. GB demand for aggregates, cement and RMX declined by about a third over the period 2007 to 2009, coinciding with the UK recession, and has still not recovered to its pre-recession levels.
13. On 10 December 2010, the European Commission Directorate General for Competition (DG COMP) announced that it had opened an investigation into sus-

pected anti-competitive practices by several manufacturers of cement and related products in various European countries including the UK, involving possible infringements of Article 101(1) of the Treaty on the Functioning of the European Union (TFEU).³ The DG COMP investigation remained open during our market investigation. It has not prevented us conducting a full investigation of features which may adversely affect competition in the markets referred to us. The nature and purpose of our investigation are different from those of the investigation being carried out by DG COMP.

14. On 18 February 2011, Lafarge S.A. (Lafarge Group) and Anglo American plc (Anglo American) announced a proposed joint venture (JV) of their UK construction materials businesses (the Anglo–Lafarge JV), including their aggregates, cement, RMX, asphalt and contracting operations, in which each would take a 50 per cent stake.
15. Following the reference of the Anglo–Lafarge JV to the CC by the OFT, the CC concluded in May 2012 that the proposed JV might be expected to result in a ‘substantial lessening of competition’ leading to prices that would be higher than might otherwise be the case in relation to various cement, aggregates and RMX markets in the UK.
16. The CC therefore required Anglo American and Lafarge Group to divest various cement, aggregates, RMX and asphalt assets as a condition for allowing the Anglo–Lafarge JV to proceed. The majority of these divestitures were implemented in January 2013 when Anglo American and Lafarge Group sold a package of cement, RMX, aggregates and asphalt operations to Mittal Investments Sarl, thereby creating

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

Hope Construction Materials (HCM). On the same day, Anglo American and Lafarge Group completed their JV, creating a new entity called Lafarge Tarmac.

The Majors and vertical integration

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

The relevant markets

20. In defining the relevant markets in which to undertake our competitive assessment, we focused on the extent of substitution between different products and how this might vary by customer, location or application.
21. We concluded that the appropriate market definitions for the purposes of our investigation were:
- (a) A single relevant product market for all construction aggregates,⁴ including crushed rock and sand and gravel aggregates as well as recycled and secondary aggregates (although the extent of substitutability of recycled and secondary aggregates for primary aggregates varied significantly by application). We found that the geographic scope of aggregates markets was local in nature, with the precise geographic specification varying according to a variety of local factors.⁵
 - (b) A single relevant product market for bulk grey cement including different types of cement (ie CEM I, CEM II, CEM III etc) and imported and GB-produced cement. We also took into account the role played by GGBS and PFA in the market for grey cement. In terms of geographic scope, we focused primarily on competition at a GB level, taking into account the constraints from imported cement as part of our competitive assessment. We defined bagged cement as a separate product market due to the lack of demand-side substitutability between bulk and bagged cement.
 - (c) A single relevant product market including all specifications of RMX as well as RMX supplied from fixed plants and site plants and concrete supplied from volumetric trucks. We found that RMX markets were highly localized in nature, with narrow catchment areas within about 8 to 10 miles of RMX plants, albeit with

⁴ As well as construction aggregates, there are specialist aggregates used for certain specialist applications (for example, high purity limestone used for its chemical characteristics). We did not receive any specific submissions regarding competition issues in the markets for specialist aggregates, nor did we become aware of any such concerns during the course of our information gathering and analysis for this investigation more broadly. While we did not find evidence in this market investigation of features giving rise to an AEC in any such market, we make no finding as to whether or not there are competition problems in particular specialist aggregates markets.

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

some scope for variation in catchment area according to local factors and the means of distribution (since RMX is a perishable product and can only be transported for a limited time after it has been mixed).

Theories of harm

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

(a) Unilateral market power. Individual suppliers may have market power within relevant markets as a result of market concentration and barriers to entry. Such suppliers may have the ability to set higher prices than would otherwise be the case, or reduce the quality of other aspects of their offer, as a result of limited competition from other suppliers, and limited threat of entry or expansion into the market by other suppliers. We included within our assessment of this theory of harm the effect on competition in the relevant markets of the arrangements for the supply of GGBS and PFA in GB.

(b) Coordination. Coordination between suppliers may distort or restrict competition. This may arise because suppliers are aware and take into account that competition with rivals (for example, to undercut their prices in order to win more business) will lead to competitive responses by rivals, with the result that their profits will ultimately be lower than if they avoided or limited competition. The result of coordinated behaviour may be that prices are higher (or the quality aspects of firms’ offers are lower) than would otherwise be the case.

(c) Vertical integration and exclusionary behaviour. We examined several different hypotheses under this heading. One is that vertical integration may itself affect suppliers’ costs so that non-integrated suppliers are unlikely to be able to compete effectively with integrated suppliers. Another hypothesis is that one integrated supplier (acting unilaterally) may be raising the price of cement (and/or

aggregates) relative to the prices of RMX, with the effect of squeezing the margins of non-integrated RMX suppliers, such that non-integrated suppliers are weakened or excluded from the market. A variant on this hypothesis is that several integrated suppliers (acting collectively) may be squeezing the margins of non-integrated RMX suppliers.

(d) Aspects of policy and regulation may have the effect of preventing, restricting or distorting competition.

Aggregates

23. As geographic markets for construction aggregates are local, the ability of firms to exercise unilateral market power or to coordinate is likely to vary depending on the competitive conditions in different local areas, for example the level of concentration. Therefore, much of our competitive assessment of GB aggregates markets focused on understanding the geographical scope of local aggregates markets, the identity of suppliers and level of concentration in these markets, and on comparing outcomes across local markets to analyse whether there were any widespread features of the GB aggregates markets that gave rise to one or more AECs through the exercise of unilateral market power or coordination.
24. In undertaking our competitive assessment of construction aggregates markets in GB, we examined aspects of market structure, market outcomes and conduct, as well as analysing the impact of recent market developments. While we noted that the Majors collectively supplied the majority of construction aggregates in GB, we also found that in 2011 there were over 200 non-Major aggregates suppliers in GB.
25. In relation to unilateral market power in GB construction aggregates markets, our analysis indicated that:

- (a) There were significant barriers to entry into local aggregates markets through the supply of primary aggregates due (in the case of land-won primary aggregates) to the time required to identify and acquire a suitable site and to obtain planning permission and (in the case of marine aggregates) to licensing requirements. However, we found that there were fewer barriers to the expansion of existing aggregates operations, and to entry through the supply of recycled and secondary aggregates.
- (b) Most customers had a choice of several different aggregates suppliers, and the extent of high concentration in local markets was limited.
- (c) According to our price-concentration analysis (PCA)⁶ and entry and exit analysis⁷ (E&EA), when customers had a wider choice of aggregates supplier (including suppliers of recycled aggregates), this did not clearly lead to lower prices. However, we noted that our PCA and E&EA produced average results across GB, and might hide local or regional variability in competitive constraints.
- (d) The Majors' returns on capital employed in their aggregates operations had been low to modest over the last five years (albeit on a GB-wide basis), with the exception of one company which appeared to have had significantly higher returns than the others.
- (e) For each Major, aggregates margins (at divisional level) had been gradually falling over the period 2007 to 2011—with price increases being outpaced by growth in variable costs. Our analysis of the medium-tier non-Major aggregates producers showed volatility and significant variation in margin levels over the period 2007 to 2011.

26. We carried out telephone interviews of aggregates customers and non-Major aggregates suppliers that were active in two case study areas of GB: South Wales and the

⁶ PCA uses econometric techniques to examine the relationship (if any) between the price for a good in an area and the strength of competition to supply that good in that area.

⁷ An E&EA uses econometric techniques to examine how prices may change with the entry or exit of a competitor in a local area.

west of East Anglia. We also carried out a review of documents that we obtained from the Majors in relation to their operations in these areas. These two case study areas were both characterized by relatively high levels of concentration in terms of shares of supply by the Major aggregate producers. The case study interviews suggested that the presence of independent aggregates producers generated downward pricing pressure and that consolidation of aggregates producers had diminished this local competition. However, taken as a whole, the case study documents and the case study interviews did not appear to suggest that unilateral market power was a problem in either of the two case study areas.

27. We noted that there were some aspects of the supply of construction aggregates in GB that might make at least some local markets susceptible to coordination. These included the high market shares held by the Majors in some local markets, product homogeneity, barriers to entry into the production of primary aggregates, structural links between firms and price announcement behaviour (although any patterns in this behaviour were not clear).
28. However, we found that there were several factors that reduced our concern that coordination might be occurring in local aggregates markets. These factors were:
 - (a) geographical differentiation of aggregates products;
 - (b) wide variation in competitive conditions (eg the number and identity of suppliers) from one local area to another; and
 - (c) the Majors' relatively modest (in general) returns and falling margins on their aggregates operations.
29. The result of our aggregates case studies also reduced our concern that coordination might be occurring in the two areas which we assessed. Neither the document review

for the case study areas nor our interviews with customers and non-Major suppliers suggested that coordination might be occurring in these local areas.

30. Overall, we did not find evidence indicating widespread competition problems across multiple local markets (whether as a result of unilateral market power or coordination). Our detailed analysis of the supply of aggregates in two areas of GB also did not find any evidence of competition problems with respect to these two areas. Given the lack of concerns raised by our analysis, both across multiple local markets and in the two specific areas we assessed, and given constraints on the time and resources available for our investigation overall, we did not carry out further analysis of individual local markets for aggregates. We have not identified any features giving rise to an AEC in any market in GB for the supply of construction aggregates through unilateral market power or coordination.
31. We considered that recent market developments, including the formation of Lafarge Tarmac and HCM, did not have a material impact on our competitive assessment of GB aggregates markets. Although Lafarge Tarmac is now, by some margin, the largest producer of aggregates in GB, these market developments have only very slightly increased the number of local aggregates markets with a high degree of concentration.

Cement

32. In undertaking our competitive assessment of the GB cement markets, we examined aspects of market structure, market outcomes and conduct, as well as analysing the impact of recent market developments.
33. Evidence on market outcomes indicated that competition in the GB cement markets was not working effectively. This evidence included:

(a) Increases in average cement prices in real terms between 2007 and 2011 and maintenance of the GB producers' variable profit margins—with three out of the four GB producers able to increase their margins—against a backdrop of declining demand (down 36 per cent from 2007 to 2009) and increasing costs. While we were told that the main reason for the stability or even increase in variable profit margins in 2009 was that GB cement producers had cut costs in response to the economic downturn, we did not see strong evidence that these efficiencies had been competed away and passed on (through lower prices) to cement buyers.

(b) Profitability based on the continuing costs of supply across the GB producers (and for Lafarge, Hanson and Cemex taken together) exceeding the cost of capital from 2007 to 2011, despite the demand slump during this period and the fact that this profitability measure was not adjusted for the higher operating costs undoubtedly associated with some older and less well-located plant. In addition, the profitability of three out of four cement producers (on all the bases we analysed) rose to levels beyond those at that start of the period, despite the continued adverse trading conditions

(c) There being only small changes in annual shares of sales (the most for any Major was four percentage points) despite the significant demand slump from 2007 to 2009.

34. We also found that customers who did not switch between cement suppliers did not benefit from the relatively lower prices of those customers that did switch—in other words, there was price discrimination.

35. In a well-functioning market, faced with a demand slump, significant excess capacity and high fixed costs, we would expect that market participants would compete vigorously on price to maintain volumes, resulting in greater volatility in shares and signifi-

cant erosion of margins with returns at or below the cost of capital (and not increasing beyond previous levels while adverse trading conditions continued).

36. To assist us in interpreting the results of our analysis, we assessed a large body of internal documentary evidence obtained from the Majors. We found that these documents provided direct evidence of coordination by Lafarge, Hanson and Cemex and/or a strategic approach by them to activity in the market that was aimed at coordinating to achieve market stability. The strength of the evidence in the internal documents varied over time. The more recent internal documents also provided evidence of examples of competition between GB producers.
37. We found that the GB cement markets were characterized by high concentration, a significant degree of transparency, frequent interactions between the main cement producers and a lack of complexity in the competitive environment and the products. These factors, taken together, suggest that the GB cement producers have strong awareness of each other's actions and are able to anticipate each other's future actions, leading to strategic interdependence in the competitive behaviour of the cement suppliers and coordination between Cemex, Hanson and Lafarge. Additional factors that in our view increased the structural susceptibility of these markets to coordination included high barriers to entry, limits to the competitive constraint imposed by imported cement and vertical integration into downstream operations.
38. In relation to imported cement, we noted that, while independent importers had experienced some growth in their collective share between 2007 and 2011 (from 6 per cent in 2007 to 9 per cent in 2011), their collective share of GB cement sales remained small (and had not changed in the few years) and the total volumes imported had not increased. We found that, although there was evidence that the GB

producers regarded imported cement as a competitive threat, the strength of the competitive constraint from imported cement was limited because:

- (a) the GB producers had a substantial short-run cost advantage over cement importers in competing for customers at the margins;
- (b) the higher costs faced by cement importers created incentives for them to price their cement just below the price of GB-produced cement; and
- (c) the GB producers considered, and in some cases took, specific steps to undermine the viability of imported cement, such as applying pressure to restrict cement supplies to independent importers, purchasing of import terminals and/or importers; leveraging of contacts with importers in other markets and targeting lower-priced cement selectively at customers of cement importers.

39. We found evidence that three GB cement producers (Cemex, Hanson and Lafarge) recognized the current (and past) structural susceptibility of the GB cement markets to coordination and took steps to exploit this susceptibility, using shares of sales as a focal point and with Lafarge taking a leadership role. This evidence included a strategic focus on maintaining market stability between the members of the coordinating group rather than independently pursuing unconstrained growth, frequently manifested in a focus on maintaining existing (or returning to pre-existing) relative shares of sales; price announcement behaviour (contributing to price leadership and price following, and to softening of customer resistance to price increases); tit-for-tat share balancing and retaliation; use of cross-sales as a mechanism for transparency, signalling and, on occasion, share balancing and retaliation; and attempts to target of importers beyond normal competition on price and service.

40. We concluded that, although the extent to which they were satisfied might vary over time, the conditions for coordination to be sustained were met in the GB cement markets (with shares of sales as the focal point) in relation to the ability to reach and

monitor coordination, the existence of a mechanism for internal sustainability and the external sustainability of coordination.

41. We described a mechanism for coordination which was supported by the available evidence. There was some evidence that there were periods when coordination was more successful, and periods when it was less successful (for example, in 2009 following one Major's large internalization of cement volumes).
42. We found that it was likely to be in the interests of Lafarge, Cemex and Hanson to adhere to the mechanism for coordination we described, whereas Tarmac was likely to be a fringe player. Furthermore, Lafarge's position as the largest cement producer, as well as the least vertically-integrated producer, was likely in our view to give it strong incentives to take a leadership role in the coordination—and in particular to take on more of the costs of coordination (including the costs of accommodating the growth in share of sales of fringe cement suppliers, ie Tarmac and cement importers). The different incentives of the GB producers (arising, for example, from differences in their size and in the extent to which they made external sales of cement) explained the different roles they adopted in the market, which in turn explained why shares of sales had not been perfectly stable despite the coordination which had been occurring in the market. Their different incentives also explained why asymmetries in their shares of sales, capacity and degree of vertical integration did not prevent—and might even facilitate—coordination.
43. In relation to recent market developments, the evidence and analysis available to us indicated that the structural susceptibility of these markets to coordination, and the behaviour of market participants seeking to exploit this susceptibility, had existed over a number of years, and had been resilient to other large changes in market conditions (in particular, the significant downturn in demand and the vertical inte-

gration of Hanson into cement production over the years 2007 to 2009). Therefore we considered that the replacement of Tarmac (a single plant producer which we had found to be outside the coordinating group of firms without coordination breaking down as a result) by HCM (which is also a single-plant producer—albeit with some additional capacity compared with Tarmac) as the smallest GB cement producer was likely to be insufficiently market disrupting on its own materially to reduce our concerns about coordination in the GB cement markets. Similarly, we did not consider that a possible future recovery in demand was likely to undermine coordination in these markets, given that we found that coordination persisted during the current period of significantly reduced demand.

44. We concluded that there was a combination of structural and conduct features that gave rise to an AEC in the GB bulk and bagged cement markets.
45. The structural features are:
 - (a) high market concentration;
 - (b) transparency of sales and production shares, wins and losses and customer–supplier relationships;
 - (c) high barriers to entry (including limits to the constraint imposed by imported cement);
 - (d) homogeneity of product;
 - (e) customer characteristics and behaviour (in particular, regularity of purchases, purchases at fixed locations, concentration of customer base and single sourcing for a particular job site); and
 - (f) vertical integration from cement into downstream operations.
46. The conduct features, the individual significance of which varies over time, are:

- (a) a strategic focus on maintaining market stability between the members of the coordinating group, frequently manifested in a focus on maintaining existing (or returning to pre-existing) relative shares of sales;
- (b) price announcement behaviour (which facilitates price leadership and price following, and softens customer resistance to price increases);
- (c) 'tit-for-tat' behaviour used to balance shares and for retaliation;
- (d) use of cross-sales as a mechanism for transparency, signalling and, on occasion, share balancing and retaliation; and
- (e) attempts to target importers beyond normal competition on price and service.

47. These structural and conduct features combine together to give rise to an overarching feature in the GB cement markets, namely coordination among Cemex, Hanson and Lafarge.
48. We found that the likely effect of these features was higher prices of cement in GB than would otherwise be the case for all GB cement users, whether this cement was ultimately sold through independent RMX and concrete producers, independent merchants or through the downstream businesses of the Majors.

GGBS in the GB cement markets

49. We also found evidence of competition problems in relation to the supply of GGBS in GB. Although we did not define the GB cement markets to include GGBS, the GB cement markets include blended cement made with GGBS. Total GGBS production is equivalent to about 18 per cent of total cement production in GB. The constraint imposed on GGBS by PFA did not appear sufficient to offset any competition problems in the supply of GGBS.

50. Hanson supplies the vast majority of GGBS in the UK as a result of its contract with Tarmac (now Lafarge Tarmac) for the purchasing of GBS for grinding into GGBS, and Lafarge Tarmac's contracts with the GB steel producers for the production of GBS. There are no other suppliers of GB-produced GGBS, and there is evidence that imported GBBS faces disadvantages compared with GB-produced GGBS. Our comparison of Hanson's GGBS volumes, prices and margins with its cement volumes, prices and margins was consistent with Hanson possessing a degree of market power in relation to GGBS, resulting in higher prices for GGBS in GB than might otherwise be the case.
51. We found that Lafarge Tarmac's exclusive agreements with the GB steel producers for the production of GBS, and Hanson's exclusive long-term contract with Lafarge Tarmac for the production of GGBS, in combination with Lafarge Tarmac's and Hanson's participation in the GB cement markets, were features that gave rise to an AEC in the GB cement markets, also resulting in higher prices for cement than might otherwise be the case.

Detriment from AECs in GB cement markets

52. We considered there to be a material customer detriment arising from the high cement prices which resulted from the two AECs we identified in the GB cement markets. Using one of several possible approaches to quantifying this detriment indicated that this detriment was of the order of £180 million over the period from 2007 to 2011. However, there are several reasons that we considered this figure likely to be an underestimate of the actual detriment arising. These reasons include the short-term impact on profitability arising from the cement producers' adjustment to the recent large reduction in cement demand and the possibility that detriment may manifest itself through the ongoing inefficiency of some suppliers rather than through

high profitability. We expect to refine our estimate of the detriment in the context of our work on remedies.

RMX

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

large volumes of RMX for particular projects would be less effective than competition for other customers.

56. The supply of RMX in GB appeared to have fewer structural features than in the case of aggregates or cement that might give rise to concerns about coordination. There was some evidence that the Majors collectively held a high market share in some local RMX markets. However, the lack of barriers to entry and expansion into RMX supply, the complexity of maintaining coordination in multiple local RMX markets, the declines in the profitability of the Majors' RMX operations since 2007, coupled with the erosion of their margins (at divisional level), meant that we found that widespread coordination in the GB RMX markets was unlikely.
57. Overall, we did not find evidence indicating widespread problems across multiple local RMX markets (whether as a result of unilateral market power or coordination). Given the lack of concerns raised by our analysis and given constraints on the time and resources available for our investigation overall, we did not carry out further analysis of individual local markets for RMX. We have not identified any features giving rise to an AEC in any market in GB for the supply of RMX through unilateral market power or coordination.
58. We considered that recent market developments, including the formation of Lafarge Tarmac and HCM, did not have a material impact on our competitive assessment of the GB RMX markets. These developments had resulted in little overall consolidation in shares of supply of RMX at GB level and we had limited concerns about the impact of these market developments on concentration in local markets.

Vertical effects

59. We assessed whether vertical integration in aggregates, cement and RMX gave rise to one or more AECs through exclusionary behaviour towards rivals. Most exclusionary behaviour concerns expressed by parties related to the possibility of foreclosure⁸ of the supply of cement (rather than aggregates) to rivals in GB RMX markets.
60. We found that the following evidence did not point in the direction of any widespread foreclosure:
- (a) High-level evidence on RMX shares of supply: the collective share of supply of RMX in GB held by independent RMX producers had grown from 21 per cent in 2005 to 27 per cent in 2011.
 - (b) Entry and exit of independent RMX producers: although there had been some exit by independent RMX producers in the period between 2007 and 2010, the Majors had closed many more RMX sites than the independent RMX producers during that period. In addition, while there had been net exit by the Majors between 2007 and 2010, there had been a small net entry by independent RMX producers.
 - (c) RMX-related pricing behaviour of the Majors: there was evidence that the average price of cement paid by independent RMX producers had increased more than the average downstream price of RMX, suggesting that the margin available to RMX producers over cement costs was likely to have reduced between 2007 and 2011. However, the evidence on the internal pricing policies of the Majors (namely that they set relatively high internal transfer prices for aggregates to their internal RMX businesses) and on the prices at which the GB cement producers sold cement to each other (namely that, in many cases, GB cement producers tended to charge each other higher prices, on average, than they did to indepen-

⁸ Foreclosure occurs when a vertically-integrated company restricts its rivals' access to customers or to an essential input. If the strategy is successful, rivals may be excluded from the market (total foreclosure) or be unable to compete effectively (partial foreclosure).

dent customers) suggested that, rather than trying to foreclose independent RMX producers, the aim of the Majors was to soften competition in the downstream RMX markets.⁹

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

Effects of policy and regulation on competition

62. We considered whether certain aspects of policy and regulation that covered the relevant markets could affect the way competition works in those markets.
63. We examined the operation of aggregates landbanks in detail.¹⁰ We had several concerns about the operation of landbanks, including the possibility that existing aggregates producers might have an incentive to obtain and hold sites with permitted reserves (either without developing them further, or by mothballing previously operational sites) so that the landbank in an area remained above the minimum target period and new entrants would find it difficult to obtain planning permission for new sites.
64. However, our analysis of aggregates landbank data indicated that aggregates producers' shares of permitted reserves in landbanks were in most cases in proportion to their share of supply of aggregates. Further, we saw evidence that the planning system was felt to work well and applications for new primary aggregates sites did

⁹ Although we noted that vertical integration could have the effect of dampening competition in RMX markets, we thought the main impact of vertical integration would be to dampen competition between cement suppliers through the role of vertical integration in coordination.

¹⁰ In the context of aggregates planning, a 'landbank' is defined as a stock of planning permissions (as measured in years) for permitted reserves (ie reserves for which planning permission has been granted allowing them to be extracted) to ensure continuity of aggregates production for a set number of years based on current extraction rates.

not tend to be constrained by landbank considerations. We also noted the arguments that holding sites with permitted reserves without developing them (or mothballing previously operational sites) in order to preserve landbanks and prevent competitors obtaining planning permission (a) would not be commercially viable, and (b) would raise the possibility that the relevant planning authorities could issue prohibition orders on such sites which would prevent the extraction of aggregates in the future. We also noted that the Government's new national planning framework and planning guidance helped address our landbank concerns. Taken together, we found that these factors suggested that planning policy concerning aggregates landbanks was unlikely to be distorting competition in local aggregates markets.

65. We examined the extent to which the aggregates planning system had the potential to increase market transparency between suppliers and found that it was unlikely that commercially sensitive information would be exchanged between suppliers during the planning process.
66. We also examined the effect of the aggregates levy on competition. The aggregates levy (currently £2 per tonne when primary aggregates are commercially exploited) was introduced in 2002 with the aims of reflecting some the environmental costs of quarrying and introducing a price incentive to encourage the use of waste, spoil and recycled aggregates.
67. We recognized that the introduction of the aggregates levy had placed an additional cost on primary aggregates production resulting in an increase in the price of primary aggregates. We also recognized that the effectiveness of the levy in incentivizing the use of secondary and recycled aggregates (which is the primary aim of the levy) might be limited by the extent of substitutability between primary aggregates and secondary and recycled aggregates. However, we concluded that the aggregates

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

68. The European Union Emissions Trading Scheme (EU ETS) is a carbon trading system designed to limit and reduce the greenhouse gas emissions produced by energy-intensive industry sectors (including cement clinker production) and electricity generators. We considered the effect of the ETS ‘partial cessation’ rules on the incentives of EU cement producers in certain countries (such as Spain, Greece and the Republic of Ireland) where domestic demand was currently extremely low relative to production levels in previous years. We looked at their incentives to export more cement to GB as a result of the partial cessation rules as part of our assessment of the constraint from imported cement on GB-produced cement.¹¹ Several other concerns were also raised with us about the effect of the ETS on competition in the GB cement markets, including that:

(a) it gave cement producers outside the EU (which were not covered by the ETS) a significant competitive advantage relative to EU producers because they did not incur the costs associated with the ETS; and

¹¹These incentives arise because, under the partial cessation rules, cement producers that are not producing at least 50 per cent of their historical clinker production (with thresholds also at 25 and 10 per cent) have their EU Allowances (ie permits to emit CO₂ under the ETS) dramatically reduced. Because EU Allowances are currently allocated free to EU cement producers and are tradable, their loss would represent a significant loss of revenue for the cement producers affected.

(b) the partial cessation rule could affect cement production efficiencies, as it gave cement producers incentives to keep all their plants open, albeit at a reduced rate of capacity utilization, so as to obtain a full entitlement of EU Allowances.

69. We noted that it could, in principle, be the case that the ETS created a distortion in the relative costs of producing cement inside and outside the EU. However, because none of the cement supplied in GB is currently imported into GB from outside the EU, we do not believe that the existence of the ETS is distorting competition in the GB cement market in favour of non-EU producers to a material extent.
70. We saw evidence that the way EU Allowances were allocated to cement producers under the ETS, together with the partial cessation rule, created incentives for GB producers to allocate production between their plants in a less efficient way than would otherwise be the case, in order to retain in full their free allocations of EU Allowances. This means that some less efficient plants may continue to operate and that economies of scale from concentrating production at fewer plants are not being realized. These inefficiencies could have the effect of increasing the cost of cement production and ultimately increasing the price consumers pay for cement. However, we did not find evidence that, even if marginal costs are increased for some producers as a result of such inefficiencies, this has had a material effect on cement prices. Therefore we reached no decision on whether the incentives for inefficient production created by the ETS partial cessation rules gave rise to an AEC. We were, however, concerned that we observed these incentives for inefficient production (ultimately resulting in higher carbon emissions than might otherwise be the case), which are generated by the way in which EU Allowances are allocated to cement producers under the ETS and the partial cessation rules.

71. We also examined the nature and interaction of several UK government schemes relating to energy efficiency, and their possible impact on competition in the relevant markets:

(a) The Carbon Reduction Commitment (CRC) started in April 2010 and is aimed at improving energy efficiency for large organizations whose electricity consumption exceeds 6,000 MWh. The CRC operates as a UK-wide 'emissions trading' scheme and requires each participating organization to (among other things) purchase allowances from the Government to cover its carbon emissions for the previous year. The CRC does not apply to those carbon emissions that are already covered by the ETS, and therefore excludes cement producers in the UK. However, the CRC does cover large aggregates sites.

(b) A Climate Change Agreement (CCAg) is a voluntary agreement entered into with the Government by a sector. Under a sector 'umbrella agreement', any operator (that meets the eligibility criteria) in certain energy-intensive industries can enter the sector agreement. The cement/clinker and slag grinding (eg GGBS) sectors (among others) have entered into CCAgs with the Government. Aggregates producers are, however, not covered by a CCAg.

72. We found that these policies and their interaction distorted competition in that they had different impacts on different types of producers of the reference products—in particular, aggregates—in a manner that was unrelated to the energy efficiency of their operations (ie the intended policy outcome of these regulations). For example, an integrated aggregates and cement producer which had a CCAg would be exempt from the CRC but a stand-alone large aggregates company would have to comply with the CRC in full. This arises because:

(a) the CRC does not apply to those carbon emissions already covered by the ETS (eg cement operations) but covers large aggregates sites;

(b) smaller aggregates producers would be exempt; and

(c) if over 25 per cent of an organization's emissions are covered by a CCAg (which cover, among others, producers of cement but not producers of aggregates), it will be exempt from certain aspects of the CRC ('the CCAg exemption').

73. We found that the interaction between CCAgs and the CRC appeared to increase the costs of some aggregates producers more than others, regardless of the relative efficiencies of producers in terms of carbon emissions per tonne of aggregates produced. However, the Government proposes to abolish the CCAg exemption to the CRC from 1 April 2014 under an Order currently before Parliament. We therefore did not find that the interaction between CCAgs and the CRC was a feature giving rise to an AEC.