COMPETITION COMMISSION

Anglo American PLC and Lafarge S.A.

A report on the anticipated construction materials joint venture between Anglo American PLC and Lafarge S.A.

1 May 2012

Website: www.competition-commission.org.uk

Members of the Competition Commission who conducted this inquiry

Roger Witcomb *(Chairman of the Group)*

Alexander Johnston

Ian Jones

Richard Taylor

Chief Executive and Secretary of the Competition Commission

David Saunders

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 Some numbers have been replaced by a range.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

Contents

Page

Appendices

X: Divestiture risks
Y: Relevant customer benefits

Glossary

Summary

1. On 2 September 2011, the Office of Fair Trading (OFT) referred to the Competition Commission (CC) for investigation and report under the Enterprise Act 2002 (the Act) the anticipated construction materials joint venture between Anglo American PLC (Anglo American) and Lafarge S.A. (Lafarge Group). Following two extensions to the original inquiry period ending on 16 February 2012, we are required to publish our final report by 1 May 2012.

2. The reference requires us to determine:

   (a) whether arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation; and

   (b) if so, whether the creation of that situation may be expected to result in a substantial lessening of competition (SLC) within any market or markets in the UK for goods or services.

3. The operations that Anglo American and Lafarge Group plan to contribute to the proposed JV are, in broad terms, their UK activities in the production of cement, aggregates, asphalt and ready-mix concrete (RMX). In this report we refer to this transaction as 'the proposed JV'. We refer to the new entity to be created by the transaction as 'the JV entity'.

4. We found that the proposed JV would result in the creation of a relevant merger situation because the share of supply test was met.

The products

5. Cement is the 'glue' that binds together the components of building materials. Among other uses, cement is mixed with aggregates and water to produce RMX. Cement is made from a mixture of finely ground limestone or chalk (or other materials with a high calcium content), clay and sand (or other sources of silica and alumina). This mixture is processed to create an intermediate product, cement clinker. The finished cement is produced by grinding together clinker with a small percentage of additives.

6. Different types of cement are produced by blending ground clinker with other materials, including ground granulated blast furnace slag (GGBS) and pulverized fly ash (PFA). These different types of cement (also known as blended cements) are defined by their strength development and setting times, which are determined by the proportions and nature of the different products used to make them. CEM l is the basic, and the most widely produced, cement in Great Britain. CEM II (cement consisting of ground clinker and between 6 and 35 per cent of an additive such as PFA) and CEM III (cement consisting of ground clinker and more than 36 per cent GGBS) are the other two main types of cement supplied in the UK.

7. Aggregates are the granular base materials used in the construction of roads, buildings and other infrastructure and are also a key component of asphalt and RMX. Aggregates may be divided into:

   (a) primary aggregates, which are extracted from quarries, pits and (in the case of marine aggregates) the seabed; primary aggregates may come from either sand and gravel pits or crushed rock quarries;

(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. There are also specific types of primary aggregates for certain 'specialist' applications. They include:

(a) rail ballast, used as a bedding material underneath railway tracks; and

(b) high purity limestone (HPL), which is used in various industrial applications, including flue gas desulphurization (FGD) at coal-fired power plants.

9. Asphalt is produced by heating and mixing aggregates and a viscous binding agent, usually bitumen. Its principal applications are in the surfacing of roads, car parks, footpaths, pavements and other surfaces.

10. RMX is concrete that is produced in a freshly mixed and unhardened state. RMX is made from cement and (if desired) other materials such as GGBS and PFA, mixed with fine aggregates and coarse aggregates, water and other additives.

11. Five vertically integrated companies with national coverage ('the majors') are involved in the production and/or supply of cement, aggregates, asphalt and RMX in the UK:

(a) Aggregate Industries UK Ltd (Aggregate Industries)—the UK operations of Holcim Limited, a global building materials producer listed on the SIX Swiss stock exchange. Unlike the other majors, Aggregate Industries does not produce cement in the UK, but is both an importer of cement and a purchaser of UK-produced cement;

(b) Cemex UK Operations Limited (Cemex)—the UK operations of Cemex SAB de CV, a global building materials company listed on the Mexican stock exchange;

(c) Hanson—we use this term to refer to both the UK operations of Hanson and the operations of HeidelbergCement AG, Hanson's ultimate parent company, which is a global provider of building materials and is listed on a number of German stock exchanges;

(d) Lafarge Group (through its UK Cement and Aggregates & Concrete divisions). Lafarge Group is listed on the Paris Stock Exchange; and

(e) Anglo American's Tarmac business. Anglo American has a primary listing on the London Stock Exchange.

Anglo American and Tarmac

12. Anglo American is a global mining and industrial business. It will contribute to the proposed JV Tarmac Group's entire UK operations with the exception of Tarmac Building Products Limited (TBP), a producer of heavy building materials including concrete blocks. Tarmac is active in the production and sale of cement, aggregates, asphalt, RMX and lime, as well as providing services in asphalt surfacing and maintenance, and waste management. In FY10, Tarmac generated revenues of just over £1 billion, all of which were generated in the UK.

13. Tarmac's cement operations comprise a quarry and cement plant located in Tunstead near Buxton in Derbyshire, and some cement depots.

14. Tarmac produces and supplies primary aggregates from quarries and depots in the UK and operates a dredging business around the UK coast for the extraction of marine aggregates. Tarmac also operates recycling and secondary aggregates sites.

15. Tarmac also has a large number of fixed asphalt plants and fixed RMX plants.

Lafarge

16. Lafarge Group is a multinational producer and supplier of construction and building materials, focusing on cement, aggregates, concrete and gypsum. Lafarge Group will contribute its UK Cement and Aggregates & Concrete divisions to the proposed JV (together, Lafarge). In FY10, Lafarge generated total revenues of around €920 million.

17. In Great Britain, Lafarge operates four cement plants and a number of cement depots and cement import terminals. In Northern Ireland, Lafarge operates one cement plant and one depot.

18. In the UK, Lafarge operates primary aggregates quarries and depots, along with several marine aggregates wharves and aggregates recycling sites, with additional recycling activity taking place on an occasional basis at Lafarge quarries and depots.

19. Lafarge currently operates a number of fixed asphalt plant sites and owns a few mobile asphalt plants (plants which can be located at the customer's site). It also has a considerable number of fixed RMX plants, and a few additional RMX plants which are located on the sites of precast concrete producers dedicated to supplying those customers. Lafarge also operates a few mobile RMX plants.

The counterfactual

20. We found that, had the JV transaction not been proposed, the prevailing competition between Tarmac and Lafarge would have been likely to continue largely unchanged.

The relevant markets

21. We found that the relevant product markets for the purposes of our inquiry were:

    (a) the supply of bulk cement. However, we recognized that differing constraints might characterize different products within this market, for example in relation to CEM I, which was the main input for the production of the other types of cement, and in relation to imported and domestically produced cement. Therefore, in the competitive assessment, we also considered the competitive constraints arising for these products;

    (b) the supply of bagged cement;

    (c) the supply of primary aggregates (of all grades) for construction applications. We recognized that differing constraints might characterize different products within this market and that constraints might also arise from products outside this market. Therefore, in our competitive assessment, we considered a market segmentation into crushed rock aggregates and sand and gravel aggregates, and we considered specific products within these two segments. We also considered the

possible constraints arising from secondary and recycled aggregates when available in a given geographic market;

(d) the supply of rail ballast;

(e) the supply of HPL (of all grades) for industrial purposes. We recognized that the extent to which customers could switch between different grades of HPL depended on the specific application in which HPL was used and that for FGD, in particular, the specification of the product was tight. We therefore considered in our competitive assessment the constraints in relation to this specific use of HPL;

(f) the supply of asphalt (produced either by fixed or by mobile plants); and

(g) the supply of RMX (whether produced by fixed, site or mobile plants). We did not include volumetric trucks (ie trucks which carry RMX ingredients separately and mix them on site) in the relevant market but we considered competitive constraints from them in our competitive assessment.

Theories of harm

22. We identified four ways in which the proposed JV might harm competition ('theories of harm'), namely:

(a) 'Unilateral horizontal effects.' Loss of competition between Tarmac and Lafarge as a result of the proposed JV might enable the JV entity to increase prices, worsen quality or service levels and/or reduce capacity through plant closures (or mothballing) in one or more of the relevant markets.

(b) 'Coordinated effects.' In relation to any one or more of aggregates, asphalt, cement or RMX, the proposed JV might make any pre-existing coordination between the majors more stable or effective or, in the absence of pre-existing coordination, might create the conditions where such coordination was likely. Coordinated effects may arise when firms operating in the same market recognize that they are mutually interdependent and that they can reach a more profitable outcome if they coordinate to limit their rivalry.

(c) 'Vertical effects arising from unilateral market power.' The proposed JV might create or enhance vertical integration in certain local areas, such that the JV entity would have the ability and incentive to engage in partial or full input foreclosure[1] in certain local areas in relation to:

(i) cement sold to RMX-producing customers;

(ii) aggregates sold to RMX-producing customers; and/or

(iii) aggregates sold to asphalt-producing customers.

(d) 'Vertical effects arising from coordination.' By making coordination between the majors likely to arise, or by making any such pre-existing coordination more effective, the proposed JV might result in partial or full input foreclosure in certain local areas (as in the case of vertical effects arising from unilateral market power).

---

[1] Full input foreclosure occurs when a supplier refuses to supply an input to customers which use that input to compete with it in downstream markets. Partial input foreclosure occurs when a supplier increases (to a greater extent than otherwise might be expected) the prices of an input to customers which use that input to compete with it in downstream markets.

Unilateral effects

Primary aggregates for construction applications

23. We carried out a local competitive analysis in catchment areas around primary aggregates sites, as primary aggregates for construction applications are, on the whole, transported over relatively short distances (unlike aggregates for specialist applications such as rail ballast, which travel much greater distances and for which there generally appeared to be national markets). Having established the relevant catchment areas, we then identified in which of these areas Tarmac and Lafarge both had plants ('overlap areas'). We then used filters to identify in which of these overlap areas there might be competition problems ('possible problem areas'). We used filters that combined information from our price-concentration analysis (PCA)—which involved developing econometric models to determine the extent to which greater competition from rivals was associated with lower prices in local areas—with information on the reduction in the number of competitors in the area concerned. The final step was to analyse the competitive dynamics in each of the possible problem areas individually so as to decide where there would be likely to be a competition problem.

24. Having identified 43 possible problem areas, we considered the competitive dynamics in each possible problem area on an individual basis. We looked at shares of production for primary aggregates, crushed rock and sand and gravel, and all aggregates, as appropriate. We also took into account the existence of local sources of recycled and secondary aggregates, the geographical distribution of production sites and demand and any geographical barriers that might limit the scope of competition between plants that otherwise appeared to be in the same local market.

25. We identified 19 local primary aggregates markets in which we considered that the proposed JV would be likely to result in an SLC.

Rail ballast

26. Network Rail buys around 99 per cent of the rail ballast produced in the UK. There are only a few suppliers of rail ballast and relatively few shipping points (ie quarries or depots) in the UK. The main suppliers are: Lafarge; Midland Quarry Products (MQP), a JV between Tarmac and Hanson; Aggregate Industries; and Cemex.

27. We found that:

(a) The proposed JV would bring together the largest supplier of rail ballast (Lafarge) and the second largest supplier (Tarmac, through MQP). After the JV there would be no other remaining suppliers of rail ballast with a significant share.

(b) It was unlikely that the remaining competitors would have the ability to constrain the proposed JV's pricing. This was due to the effect of the locations of their quarries on the cost to supply rail ballast into certain geographic areas and, therefore, on the price the remaining competitors would charge to Network Rail in those areas.

(c) Network Rail's position as the purchaser of almost all the rail ballast sold in the UK had not given it countervailing buyer power.

(d) It was unlikely that entry or imports could constrain the proposed JV's pricing.

28. We therefore concluded that the proposed JV would be likely to result in an SLC in the supply of rail ballast.

HPL

29. We found that the proposed JV would be unlikely to result in an SLC in the supply of HPL for non-FGD customers, as there appeared to be sufficient alternative suppliers.

30. For HPL for use in FGD, we found that:

(a) There were only a small number of power station customers of HPL for FGD. They issued tenders for the supply of HPL through long-term contracts and they were all currently supplied by either Tarmac or Lafarge.

(b) Suppliers of HPL for FGD had to meet the technical specification for this application and have rail-linked quarries located sufficiently close to the coal-fired power stations to allow them to bid competitively for tenders. Our analysis confirmed that HPL for FGD did not travel long distances.

(c) Limestone powder producers did not appear to represent a significant competitive constraint, both as a result of a lack of rail-linked quarries and existing FGD equipment being tailored for the use of specific grades of HPL.

(d) Imports were unlikely to be a relevant competitive constraint due to the higher transport costs involved.

(e) There was no evidence of countervailing buyer power.

(f) Other than the small number of suppliers which bid to supply HPL for FGD in recent tenders (which included Tarmac and Lafarge), no other supplier of HPL in Great Britain produced the grade of HPL suitable for customers' existing FGD equipment and/or had a rail-linked quarry sufficiently close to the coal-fired power stations to allow competitive supply.

31. The proposed JV would therefore significantly reduce the number of possible suppliers of HPL for FGD for any contract renewal. We considered that this reduction would be likely to compromise considerably the competitive dynamic in tenders, making it easier for competing bidders to anticipate their competitors' behaviour and take this into account. We therefore concluded that the proposed JV would be likely to result in an SLC in the supply of HPL for FGD customers.

Asphalt

32. Our local competition assessment methodology for asphalt was very similar to the one we used for primary aggregates and RMX. Our initial filtering produced two possible problem areas, and, following a local competitive assessment in each of these areas, we found two local asphalt markets in which we considered that the proposed JV would be likely to result in an SLC.

RMX

33. Our local competition assessment methodology for RMX was very similar to the one we used for primary aggregates and asphalt. Our initial filtering produced eight possible problem areas, and, following a local competitive assessment in each of these areas (in which we took account of possible constraints from local volumetric truck

operators), we found seven local RMX markets in which we considered that the proposed JV would be likely to result in an SLC.

Coordinated effects

Bulk cement

34. We assessed whether the proposed JV might be expected to give rise to an SLC in the bulk cement market through coordinated effects.

35. The CC's merger assessment guidelines (the Guidelines) set out that all three of the following conditions must be satisfied for coordination to be possible:

- Condition 1: firms need to be able to reach and monitor the terms of coordination;
- Condition 2: coordination needs to be internally sustainable among the coordinating group, ie firms have to find it in their individual interests to adhere to the coordinated outcome; and
- Condition 3: coordination needs to be externally sustainable, in that there is little likelihood of coordination being undermined by competition from outside the coordinating group.

36. In accordance with the Guidelines, we analysed whether there was evidence that UK cement producers were coordinating in the bulk cement market currently and the extent to which the three conditions for coordination were satisfied. Among other things, we looked at:

(a) observed market outcomes (trends in market shares, changes in margins over time, evidence from our PCA, evidence from customers on the behaviour of UK cement producers and evidence on customer switching); and

(b) internal documents from the main parties and the other UK majors.

37. The evidence we reviewed indicated that there were aspects of the market that were not consistent with a competitive market but were consistent with a degree of pre-existing tacit coordination. That evidence included:

(a) pricing behaviour and sustained margins that did not appear to be consistent with the excess capacity in the industry. In particular, increases in the variable profits per tonne of cement over the period 2007 to 2010 appeared inconsistent with cement producers competing for customers in a market with falling demand and excess capacity;

(b) the degree of stability of shares of production at the time of large changes in demand and in the structure of the industry; and

(c) the results from our PCA which were consistent with several explanations, including the existence of a degree of coordination in the market.

38. Our analysis also indicated that each of the three conditions for coordination was satisfied to some extent before the proposed JV. Taken together with the evidence on market outcomes, this indicated that the market was already susceptible to coordination before the proposed JV.

39. We considered that Condition 1 (the ability to reach and monitor the terms of coordination) was satisfied to some extent before the proposed JV. The bulk cement market is very concentrated and not particularly complex. Cement is a relatively homogeneous product. Coordination on shares of production and/or wins and losses of customers appeared feasible. The practice of sending out price announcement letters could assist the UK cement producers in coming to a common understanding on the timing and direction of price movements. Further, we found that the UK producers could monitor, with a fair degree of accuracy, their own shares of production with a one-month time lag, and this could be complemented with monitoring of gains and losses of their own customers and sales volumes and information from their in-house RMX operations.

40. We considered that Condition 2 (internal sustainability of coordination) was satisfied to some extent before the proposed JV for the following reasons:

(a) The lack of differentiation between cement made by different UK producers (within each type of cement) and the large capital investment required to become a cement producer creates large incentives to coordinate, because without coordination, it is likely that competition would be strong in times of excess capacity (and hence returns would be low).

(b) There was sufficient excess capacity in the cement market and customers were able to switch sufficiently easily between cement producers to enable punishment strategies based on taking cement sales from a deviator to be effective.

(c) One available mechanism for punishment would be to reduce cement prices to the deviator's customers so as to reduce the deviators' cement sales volumes and margins. Such a mechanism appeared likely to be effective in this market given the lack of long-term contracts, regularity of cement purchasing, and customer price sensitivity. The scope for such a punishment mechanism to disrupt the market in general (in pushing industry cement prices down) was limited by the limited transparency of realized prices for cement and the existence of a large number of local markets for RMX, and it would therefore be relatively inexpensive for the punishing firm to implement.

(d) Repatriation of cement volumes (the bringing of volumes purchased from another producer back into in-house supply) would potentially also be an effective signalling or punishment mechanism or both. It would be swift, targeted and (if used as a signalling mechanism) could reduce the risk of more costly punishment being required and (if used as a punishment mechanism) could be very costly to deviating firms while having a low risk of destabilizing the market. We found that repatriation had occurred regularly in the past three years. However, Lafarge was at present constrained, compared with the other UK major producers, in its ability to repatriate because it was not currently a large buyer of cement for its own use. Tarmac was constrained in its ability to repatriate because it could not easily increase its self-supply of cement.

(e) It would also be feasible for the cement producers to punish deviations in the cement market through targeted reductions in the price of RMX sold by their integrated RMX businesses.

41. We considered that Condition 3 (external sustainability) was satisfied to some extent before the proposed JV for the following reasons:

(a) there was evidence to suggest that the constraint from imports was not sufficient to prevent the UK majors exercising a degree of collective market power;

(b) we found high barriers to entry into the production of cement in the UK and no evidence of countervailing buyer power; and

(c) although the evidence suggested that Tarmac was likely to have different incentives to coordinate than the other UK cement producers and (if there were some degree of pre-existing coordination) was likely to be part of a competitive fringe, Tarmac currently operates at, or close to, full capacity, suggesting that it cannot expand sales further in the short term and therefore that it would not at present be able to further undermine any coordinated outcome. We noted that, in the longer term, Tarmac could use its existing planning permission to increase the capacity of its Tunstead cement plant.

42. We considered that coordination in the bulk cement market, if it existed prior to the proposed JV, would be most likely to operate in the following way:

(a) The coordinating group (which would not include Tarmac or importers) would coordinate on the basis of shares of total production and/or wins and losses of customers, rather than directly on prices.

(b) The coordinating firms could monitor coordination via monitoring of wins and losses of their own customers and/or by monitoring the changes in their total share of production, as well as signalling any future intention to change price through issuing price announcement letters and monitoring of others' price announcements.

(c) Repatriation of small volumes of cement could act as an additional signal to potential deviators to stop current deviations without necessarily getting into costly retaliatory actions. Deviations could be punished by lowering cement prices to independent cement customers, or by reducing prices charged by integrated RMX businesses to RMX users. In some circumstances, repatriation could also be used as a punishment.

(d) The coordination would result in higher prices for UK cement overall to all end-users of cement including RMX end-customers (not just for cement sold externally, or for cement sold externally to independent customers) than if the market was competitive.

43. We examined the effect of the proposed JV on the likelihood and effectiveness of coordination. Where the effect of the proposed JV would differ depending on whether or not there was pre-existing coordination, we looked at both cases. As a framework for our assessment we noted that, following the proposed JV, there would be:

(a) increased concentration in UK cement production;

(b) increased consolidation in RMX production at a UK level; and

(c) a more balanced position in terms of the degree of vertical integration between the JV entity, Hanson and Cemex (compared with the present position of Lafarge, which does not control as large a RMX business as Hanson and Cemex).

44. We considered that the proposed JV would strengthen the ability both to reach and to monitor coordination (Condition 1) because:

(a) there would be fewer cement producers; and

(b) there would be increased information available to the JV entity regarding RMX and cement purchases compared with Lafarge's current position, since the JV entity would have a larger and more widespread RMX business than Lafarge does currently.

45. We considered that the proposed JV would enhance the internal sustainability of coordination (Condition 2) for the following main reasons:

(a) there would be fewer cement producers;

(b) the JV entity would have a larger RMX business than Lafarge currently has, and this would grant it greater flexibility and options in its punishment actions (compared with Lafarge at present). We also found that the increased extent of similarities in vertical integration between the JV entity, Hanson and Lafarge would further align their incentives to coordinate and ability to punish deviations compared with the present market structure; and

(c) the proposed JV would increase the effectiveness of mechanisms to punish deviation by virtue of the increased information about the RMX markets available to the JV entity compared with Lafarge at present, allowing punishment to be better targeted.

46. We considered that the proposed JV would enhance the external sustainability of coordination (Condition 3) because it would eliminate an existing market participant (Tarmac) that appeared likely to be part of a competitive fringe and that had a strong incentive to expand (rather than reduce) its output. After the proposed JV, the threat that the JV entity might expand its capacity further (as Tarmac has done on two occasions in the last ten years) would be lower as the JV entity would already benefit from Lafarge's excess capacity.

47. We therefore found that the proposed JV would result in each of the three conditions for coordination being satisfied to a greater extent than at present in the bulk cement market. Taking into account all the evidence, we concluded that the proposed JV would make coordination in the market significantly more likely to emerge (if there were no pre-existing coordination) or if there were pre-existing coordination would increase materially its effectiveness and stability. It was not necessary in this inquiry for us to conclude on the existence or otherwise of coordination in the market before the proposed JV because we concluded that, in either case, the effects of the changes to the market arising from the proposed JV would be sufficiently large that the proposed JV would be likely to result in an SLC in the bulk cement market.

48. We noted that some of the ways in which the proposed JV would increase firms' abilities and incentives to coordinate in the bulk cement market would arise from the combination of Tarmac and Lafarge's cement businesses, and some would arise from the combination of Tarmac and Lafarge's RMX businesses. The effects specifically arising from the combination of Tarmac and Lafarge's RMX businesses would include allowing more information on the RMX market to flow to the JV entity and creating greater similarities in the vertically integrated structure of the JV entity, Cemex and Hanson, thereby aligning their incentives to coordinate and their ability to punish deviations, as well as increasing the JV entity's flexibility and options in its punishment actions. These effects would arise even if it were not proposed to combine Tarmac and Lafarge's cement businesses. Therefore any remedies for the SLC we identified in the bulk cement market would need specifically to address the consolidation in RMX production at a UK level that might otherwise arise as a result of the proposed JV, as well as addressing the increased concentration in UK cement production.

Bagged cement

49. Bulk cement is the key input into the production of bagged cement. As set out above, we found that the proposed JV would make coordination in the bulk cement market significantly more likely to emerge (if there were no pre-existing coordination) or if there were pre-existing coordination would increase materially its effectiveness and stability. We found that Tarmac had only a very small share of the bagged cement market. In light of these factors, we reached no conclusion on the effect of the proposed JV in the bagged cement market specifically as we considered that any possible concerns would be captured by our findings in relation to the bulk cement market.

Coordination in other relevant markets

50. We came to no conclusions on the scope for coordinated effects as a result of the proposed JV in the primary aggregates, asphalt and RMX markets we identified.

Vertical effects

51. The Guidelines set out the framework for assessing the likelihood of input foreclosure in terms of assessing the ability and incentive of the JV entity to harm rivals following the proposed JV, and whether the effect of any such foreclosure would be sufficient to reduce competition downstream to the extent that it gives rise to an SLC.

Primary aggregates into asphalt and/or RMX

52. We found that the JV entity would not have the ability to foreclose non-integrated asphalt or RMX producers because it would not have a sufficient share of supply of primary aggregates to non-integrated asphalt and RMX producers in any local area. We therefore did not consider the JV entity's incentives to foreclose, nor the ability of downstream primary aggregate customers to undermine any attempts at foreclosure.

53. We therefore found that the proposed JV would not be likely to result in an SLC as a result of vertical effects in relation to primary aggregate supply into asphalt and/or RMX.

Cement into RMX

54. We came to no conclusions on whether there would be likely to be vertical effects as a result of the proposed JV in relation to cement as an input to RMX. However, we noted that the scale of the RMX divestiture required to remedy the SLC we identified in the bulk cement market limited the extent to which such vertical effects could arise.

Countervailing factors

55. We considered whether there were factors that would prevent or reduce an SLC that might otherwise arise as a result of the proposed JV, including:

    (a) rivalry-enhancing efficiencies; and

    (b) expansion by existing market participants or entry by new market participants.

56. Although the main parties said that the proposed JV would lead to efficiencies, they provided no convincing evidence that any efficiency savings would be passed on to

customers. Further, efficiencies of the scale described by the main parties appeared unlikely to be sufficiently large to offset the SLC we had identified in the bulk cement market. In the local primary aggregates, asphalt and RMX markets in which we identified an SLC, we did not receive any evidence regarding how cost savings might specifically enhance rivalry in each of those markets to a degree that would offset the SLC we identified.

57. In relation to expansion:

(a) For cement, given that we found that coordination would be likely to be internally sustainable after the proposed JV, we considered that expansion by Cemex and Hanson (which could prevent or reduce the SLC in the bulk cement market) would be unlikely to occur after the JV.

(b) There was some evidence that third parties had spare production capacity in each of the local markets for primary aggregates in which we identified an SLC as a result of the proposed JV and that there was overcapacity as a whole in relation to asphalt and RMX. However, evidence from our PCA and our survey, taken together with a lack of evidence of past or planned future expansion in the specific primary aggregates, asphalt and RMX markets in which we identified competition problems, indicated that expansion would be unlikely to prevent or reduce the SLC we identified in each of those markets.

(c) We did not find evidence of expansion plans in relation to rail ballast and HPL for FGD that might offset an SLC in those markets.

58. In relation to entry, we found that for all the relevant markets, substantial excess capacity at a national level would act as a barrier to entry by reducing the incentives for new entry. In addition, we identified specific barriers to entry into particular relevant markets:

(a) For cement, the large capital investment required to build a new cement plant means that small-scale entry would not be feasible (ie there are significant economies of scale which would deter small-scale entry). Entry via setting up a grinding station (to grind clinker) or an import terminal would require economic access to a supply of clinker (in the case of a grinding station) or cement (in the case of an import terminal), both of which would either have to be imported or come from a rival UK cement supplier. This would be likely to weaken the business case for entry via either of these routes.

(b) For both primary aggregates and cement, the limited availability of suitable greenfield sites, along with the difficulties and costs in obtaining planning permission, would make any entry slow and expensive.

(c) For aggregates, the supply of raw materials for the production of secondary and recycled aggregates appears likely to be sufficiently limited (because of finite resources) and confined to specific geographic locations to make entry into production of these types of aggregates on a large scale unlikely.

(d) For asphalt, current market conditions (ie both excess capacity and falls in market demand) combined with the initial capital requirements to serve a limited local market, appeared to make entry unlikely.

59. In light of significant barriers to entry into the cement market and the uncertain plans for future entry, we found that entry into the bulk cement market would be unlikely to offset the SLC we identified in this market.

60. For primary aggregates, asphalt and RMX, we did not find evidence of specific entry plans in those local primary aggregates, asphalt and RMX markets in which we found that the proposed JV would be likely to result in an SLC. We also did not find evidence of specific entry plans in the rail ballast or HPL (for FGD) markets. Taken together with barriers to entry into these markets that we had identified, we therefore found that entry would be unlikely to offset the SLCs we identified in these markets.

Findings

61. We concluded that the proposed JV may be expected to result in an SLC leading to prices that would be higher than might otherwise be the case in the following markets:

(a) the market for the supply of bulk cement in the UK, as a result of coordinated effects;

(b) 19 local markets for the supply of primary aggregates for construction applications, as a result of unilateral effects;

(c) the market for the supply of rail ballast in the UK, as a result of unilateral effects;

(d) the market for the supply of HPL in the UK, in relation to HPL supplied for FGD applications, as a result of unilateral effects;

(e) two local markets for the supply of asphalt, as a result of unilateral effects; and

(f) seven local markets for the supply of RMX as a result of unilateral effects.

Remedies

62. We considered what action should be taken for the purpose of remedying, mitigating or preventing the SLCs we identified or any adverse effects which may be expected to result from them, having regard to the effect of any action on any relevant customer benefits (RCBs, as defined in the Act) arising from the proposed JV.

63. We concluded that prohibition of the proposed JV would clearly be an effective remedy that would comprehensively address all of the SLCs that we had identified. As this would involve no change to the existing situation before the proposed JV, there would be no risk that it would not be effective.

64. We considered whether there were any less onerous alternative remedies that might be similarly effective. In particular, we considered a series of divestiture proposals put forward by the main parties, aimed at addressing each of our SLC findings.

65. To address our SLC findings in relation to unilateral effects, the main parties proposed to divest Tarmac's stake in MQP, six other primary aggregates sites, a rail depot for the supply of aggregates, two asphalt plants and six RMX plants.

66. We concluded that, subject to the inclusion of a collocated RMX plant with one of the primary aggregates sites to be divested, divestiture of these operations to a suitable purchaser would be effective in remedying all of our SLC findings of unilateral effects in markets for primary aggregates for construction applications, rail ballast, HPL for FGD, asphalt and RMX.

67. To address our SLC findings in relation to coordinated effects, the main parties proposed to divest a package of operations comprising Lafarge's Hope cement plant, Lafarge's Dowlow quarry, three linked rail depots and a substantial portfolio of RMX sites.

68. After careful consideration, we concluded that this proposed divestiture was of sufficient scale and scope to effectively restore the essential characteristics of the market structure before the proposed JV for both cement and RMX. As a consequence, and having considered the impact on the three conditions for coordination, we concluded that allowing the proposed JV to proceed subject to the proposed divestiture would be unlikely to result in a material change in the susceptibility of the UK bulk cement market to coordination relative to the counterfactual. Subject to some necessary safeguards regarding implementation, we further concluded that the risks associated with the proposed divestiture were also acceptable. Consequently, we decided that the proposed divestiture would be an effective remedy to the SLC that we found to arise in the market for the supply of bulk cement in the UK, as a result of coordinated effects.

69. We concluded that that the combination of divestitures to address unilateral and coordinated effects represented a less onerous solution than full prohibition to the SLCs that we found. This was because they would enable the main parties to achieve some of their objectives for the proposed JV, while effectively addressing our concerns. We concluded that this would therefore be a more proportionate solution than prohibition and it was therefore our preferred solution, prior to consideration of RCBs.

70. RCBs are defined under the Act as effects such as lower prices, higher quality or greater choice of goods or services or greater innovation which are expected to accrue from a merger and would be unlikely to accrue without the merger or a similar lessening of competition. We considered two possible RCBs. We concluded that possible procurement and logistics savings arising from the proposed JV were not an RCB, as there was no evidence to suggest that these savings would be passed on to customers. We considered that there might be an RCB associated with increased penetration of RMX value-added products (VAPs), although we had some doubts as to whether the proposed JV was strictly necessary to achieve such benefits. We concluded that the potential gains associated with increased penetration of VAPs were modest and were unlikely to outweigh the harm associated with the SLC in bulk cement and the benefits of achieving an effective remedy to that SLC. Consequently, we decided not to modify our preferred remedy to take account of RCBs.

71. We therefore decided to require the main parties to implement the proposed divestitures as a condition for allowing the proposed JV to proceed. The implementation of these divestitures will be subject to the following safeguards:

(a) The CC will wish to satisfy itself of the suitability of potential purchasers for all divestitures.

(b) The main parties will be required to complete the divestiture of cement, RMX and associated operations before the CC would give its final approval to the proposed JV. Before the CC gives its final approval to the proposed JV, the main parties will also be required to obtain a suitable purchaser (or purchasers) which are contractually committed to acquiring Tarmac's stake in MQP, two further primary aggregates sites, the rail depot for the supply of aggregates and the six RMX plants to address unilateral effects, if sold on a stand-alone basis.

(c) The main parties will be required to give undertakings to put in place appropriate interim management arrangements pending any divestiture, to restrict the exchange of confidential information between the main parties until the proposed JV transaction is allowed to conclude and to ensure that the competitive capabilities of the divested operations are not harmed during the divestiture period. A monitoring trustee should be appointed, at the main parties' expense, to monitor compliance with these undertakings and the steps being taken to ensure a prompt disposal.

(d) Provisions will be included in final undertakings for a divestiture trustee to be appointed should the main parties be allowed to complete the JV but then fail to achieve an effective disposal of the remaining operations by the end of an initial divestiture period. This is of relevance to any divestitures which take place after the JV has been allowed to conclude.

72. In our judgement, this package of measures represents as comprehensive a solution as is reasonable and practicable to the SLCs arising from the proposed JV.

Findings

1. The reference

1.1 On 2 September 2011, the OFT, in exercise of its duty under section 33(1) of the Act, referred to the CC for investigation and report the anticipated construction materials joint venture ('the proposed JV') between Anglo American and Lafarge Group (together 'the main parties'). The reference requires us to determine:[2]

(a) whether arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation; and

(b) if so, whether the creation of that situation may be expected to result in an SLC within any market or markets in the UK for goods or services.

1.2 Following two extensions to the original inquiry period ending on 16 February 2012, we are required to report by 1 May 2012. Our terms of reference are in Appendix A, together with an explanation of how we have conducted our inquiry.

1.3 This document (together with its appendices) constitutes our final report. Non-commercially sensitive versions of the main party and third party written submissions are on our website, along with other documents relevant to this inquiry. We cross-refer to them where appropriate.

2. The products and companies

2.1 In this section, we describe those products which both main parties supply in the UK (the overlap products). We also set out details of the structure and activities of Anglo American and Lafarge Group, focusing on their activities which are to be contributed to the proposed JV.

The overlap products

2.2 The operations that Anglo American and Lafarge Group plan to contribute to the proposed JV are, in broad terms, their UK activities in the production of cement, aggregates, asphalt and RMX.

Cement

2.3 Cement is the 'glue' that binds together the components of building materials. Among other uses, cement is mixed with aggregates and water to produce RMX. Cement is made from a mixture of finely ground limestone or chalk (or other materials with a high calcium content), clay and sand (or other sources of silica and alumina). This mixture is heated almost to melting point (around 1,450ºC) in a large rotating kiln, creating an intermediate product, cement clinker, which has specific chemical proportions of lime, alumina, silica and iron. The finished cement is produced by grinding together around 95 per cent cement clinker with 5 per cent additives including gypsum[3] to produce a fine powder. When cement is mixed with water, the hydration of calcium silicates and aluminates causes the cement to set.

---

[2] Section 36 of the Act.
[3] A very soft mineral composed of calcium sulphate dihydrate. The addition of gypsum helps to control the time taken for the cement to harden when water is added. Anhydrite (anhydrous calcium sulphate) may also be used.

2.4 Cement may be grey or white in colour. White cement is similar to grey cement in many respects except for its colour. Obtaining this colour requires substantial modification to the method of manufacture, and because of this, it is considerably more expensive than the grey product. White cement is not produced in the UK, and previously has not been considered part of the same relevant product market as grey cement.[4] Throughout this report we use the term 'cement' to refer to grey cement only.

2.5 As well as being an input into RMX, cement is an input into (among other building products) the production of concrete and concrete products. Concrete products include concrete blocks and pre-cast concrete products.[5]

2.6 Cement is supplied in bulk or bagged. Bagging can take place either at a cement production plant, or at a depot or import terminal, where facilities exist. Bulk cement may reach the customer by bulk road tanker or very rarely by bulk rail tanker. Bagged cement is distributed to customers using ordinary lorries.

Cementitious products

2.7 Different types of cement are produced by blending ground clinker with other materials. In this report, we refer to these materials collectively as 'cementitious products'.[6] The materials include:

(a) *Ground granulated blast furnace slag*. GGBS is a by-product of the blast furnaces used to make iron (which is part of the steel-making process).[7] It is a cementitious material, which means that it is (like ground clinker) capable of a hydraulic reaction with water to form a solid crystalline structure. On its own it would develop strength extremely slowly. It is normally blended with ground clinker to produce a product that strengthens more quickly (albeit not as quickly as ground clinker on its own). Performance of concretes manufactured using clinker and GGBS is normally consistent and predictable.

(b) *Pulverized fly ash*. PFA is a by-product of pulverized fuel (typically coal)-fired power stations.[8] It consists of very fine particles of silica. PFA is a pozzolanic material, which means that it is capable of reactions to form solid crystalline structures (as for a cementitious material) but only in the presence of an alkaline environment. PFA is more variable in its properties and 'compatibility'[9] with different cements than GGBS.

---

[4] See the OFT's decision in Lafarge Cement UK/Port Land Cement Company Ltd, 2005.
[5] Concrete blocks are prefabricated building blocks made out of concrete. Pre-cast concrete products are concrete structures produced by casting concrete in a reusable mould or form which is then cured in a controlled environment and transported to a specific construction site to be lifted into place.
[6] We use the term 'cementitious products' for ease of reference, although these materials vary in the extent to which they are cementitious.
[7] [✂] is the only supplier of UK-produced GGBS. Two of the three *integrated* steelworks operational in the UK are owned by Tata Steel, with the third steelworks having reopened under the ownership of SSI UK in April 2012. [✂] GGBS is imported into Great Britain from [✂] by [✂] and from Germany by Holcim. Cemex has previously imported GGBS from Germany but does not presently because the price has increased.
[8] Depending on the power station and fuels used, PFA can be used directly in concrete manufacture following classification. However, a high proportion of PFA produced at UK power stations in its raw form cannot be used directly for cementitious applications, because of the high carbon content or other impurities, and requires further processing. The main exception to this is the Drax power station, which produces PFA of sufficient quality that it can be used directly as a cementitious product. [✂] There is also another technology available to produce PFA, Rocktron, which has recently been installed at the Fiddlers Ferry power station in Cheshire (owned by Scottish and Southern Energy). Rugeley power station in Staffordshire (owned by International Power) also produces and markets a cementitious grade of PFA. Key suppliers of PFA in Great Britain include EON, EDF, Cemex and Lafarge. PFA is also imported from [✂] by Cemex.
[9] The chemistry of the cement can be varied to increase its compatibility with PFA.

(c) *Limestone*. Limestone has almost no cementitious properties, but it is used (i) in the production of the cement clinker itself; (ii) as a minor additional constituent in the production of all cement types, when clinker is ground to produce cement; and (iii) as an additive in the production of blended limestone cement, in which it is used to replace some clinker.

2.8 Cement types (also known as blended cements) are defined by strength development and setting times, which are determined by the proportions and nature of the different raw cementitious products used to make that particular cement type, as shown in Table 1. CEM l is the basic, and the most widely produced, cement in Great Britain. CEM II and CEM III are the other two main types of cement supplied in the UK.

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

Type	*Ingredients*	*Typical uses*
CEM I	Clinker and up to 5% additives	RMX; pre-cast concrete; as a base for formulated products, eg grouts cement-based floor and tile adhesives; mortars and screeds; and site-mixed concrete
CEM II	Clinker and between 6% and 35% other single constituents, eg PFA, GGBS, limestone	RMX; general concreting; ground engineering; and soil stabilization
CEM III	Clinker and >36% GGBS	RMX

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

2.9 Blended cements are produced because they tend to be cheaper than CEM I, because they have a lower carbon footprint[10] and because they can impart certain beneficial characteristics to the cement (such as sulphate resistance).

2.10 Any cement works which has milling, blending and storage facilities for additives can produce different types of cement. As an alternative to buying bulk CEM II and CEM III, which are blended at the production site, some customers may buy CEM I and additives, such as GGBS or PFA, separately and mix these directly at their own sites (either using their own blending and storage facilities, or by using their RMX plants to mix together the required quantities of materials to produce the RMX specification desired).

Aggregates

2.11 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;[11] and

(c) recycled aggregates, which are produced, for example, from demolition sites and construction waste.[12]

[10] Clinker manufacture is very energy intensive, and generates around 0.8 tonnes of CO_2 for each tonne of clinker produced, including the energy derived from the fuels used to heat the kiln. Therefore the clinker content of cement is a key factor driving its cost and its CO_2 emissions profile. Blended cements are also known as 'low carbon cements'.
[11] For example, steel and blast furnace slag (by-products of steel and iron manufacturing processes respectively) and china clay and slate quarry waste.

2.12 Primary aggregates comprise sand and gravel and crushed rock (and a number of products within these two broad categories):

(a) crushed rock is quarried from mainly hard, naturally occurring rock deposits (eg granite, gritstone and limestone); and

(b) sand and gravel is sourced from naturally occurring alluvial deposits on land or on the seabed.

2.13 To produce crushed rock, rock is blasted from a quarry, then crushed and screened (ie sorted into different sizes—this process is also known as 'grading'). The production of sand and gravel aggregates involves crushing (where necessary), washing, screening and clarification processes.

2.14 Great Britain has a 'rock line' which extends roughly from Weymouth in the South-West to Kingston-upon-Hull in the North-East. To the north of the rock line, particularly in Scotland, Wales and north England, there are large natural deposits of rocks of the type that can be accessed for extraction and crushing. By contrast, to the south of this line, particularly in East Anglia and the South-East, naturally occurring deposits of sand and gravel are abundant but there is little or no accessible rock. Some exceptions to this exist, for example there are large deposits of granite in Leicestershire.

2.15 Aggregates are classified by the grade (ie size) of the material:[13]

(a) Fine aggregates are generally materials with a particle size of less than 5mm diameter. Fine aggregates include dust produced by crushing rock, gravel, recycled or secondary materials as well as naturally occurring sands.

(b) Coarse aggregates are materials that are produced to a specific grading above 5mm diameter. In most applications the sizes used are 10mm, 14mm, 20mm, 28mm and 40mm, although larger materials may be produced.

(c) Granular aggregates do not have a uniform size and are used to provide stability in foundation layers and bulk fill applications. They are composed of a combination of coarse and fine materials. The coarse materials provide strength and bulk while the finer component binds the material together and provides stability when compacted.

2.16 Producing a specific grade of primary aggregate necessarily results in a variety of other grades being co-produced.

2.17 Aggregates are primarily used for construction purposes and we use the term 'construction aggregates' to refer to aggregates used for such purposes.[14] These applications include:

(a) as a sub-base (the layer of stone which forms the foundation for many construction projects) and for other structural fills. In this report, we refer to these uses as 'general construction uses';

(b) in the production of RMX;

- - - - - - - - - -

[12] Other sources include highway resurfacing (which produces asphalt planings), rail ballast, excavation, municipal waste and utility operations. Secondary and recycled aggregates are thus different products. Secondary aggregates may be more suitable for some applications and recycled aggregates for others. We have noted differences between them where appropriate.
[13] Different producers may adopt slightly different classifications of these grades.
[14] The main parties estimate that 95 per cent of aggregates (by volume) are used for construction applications.

(c) in the production of other concrete products; and

(d) in the production of asphalt.

2.18 There are also specific types of primary aggregates for certain 'specialist' applications. They include (but are not limited to):

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

(b) HPL, which is limestone with a calcium carbonate content over 95 per cent, and which is used for its chemical characteristics. It is also known as chemical stone, and is used in industrial applications including FGD at coal-fired power plants[15] and the production of chemicals.[16] Limestone powders derived from HPL are also used in the agricultural and horticultural sectors, although the chemical composition is not a key property of limestone used in this application.

(c) High polished stone value[17] (PSV) aggregates, which are derived from crushed rock or sand and gravel sources.[18] High PSV aggregates are used for asphalt road surfacing in situations where there are high levels of traffic, high-speed roads or accident risk areas such as school crossings.[19]

2.19 Further details of the proportion of aggregates used in these different applications in the UK are set out in Appendix G.

Asphalt

2.20 Asphalt is produced by heating and mixing aggregates and a viscous binding agent, usually bitumen (which, in the UK, is predominantly obtained from petroleum processing). Its principal applications are in the surfacing of roads, car parks, footpath pavements and other surfaces. The specification of each type of asphalt is a function of the mix of aggregates, bitumen and additives, and is made according to a producer's proprietary design mix, to BS/EN standards, to specifications set by the Highways Agency or to one of a series of standard European Union asphalt mix specifications.

2.21 Asphalt can be produced at fixed plants or using mobile plants located at the customer site. Some plants (whether fixed or mobile) have planning permission to operate 24 hours a day seven days a week (also referred to as '24/7' plants). This permission allows suppliers to provide road-surfacing services overnight and during weekends.

---

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

[16] Including soda ash, precipitated calcium carbonate and sinter.

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

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

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

RMX

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

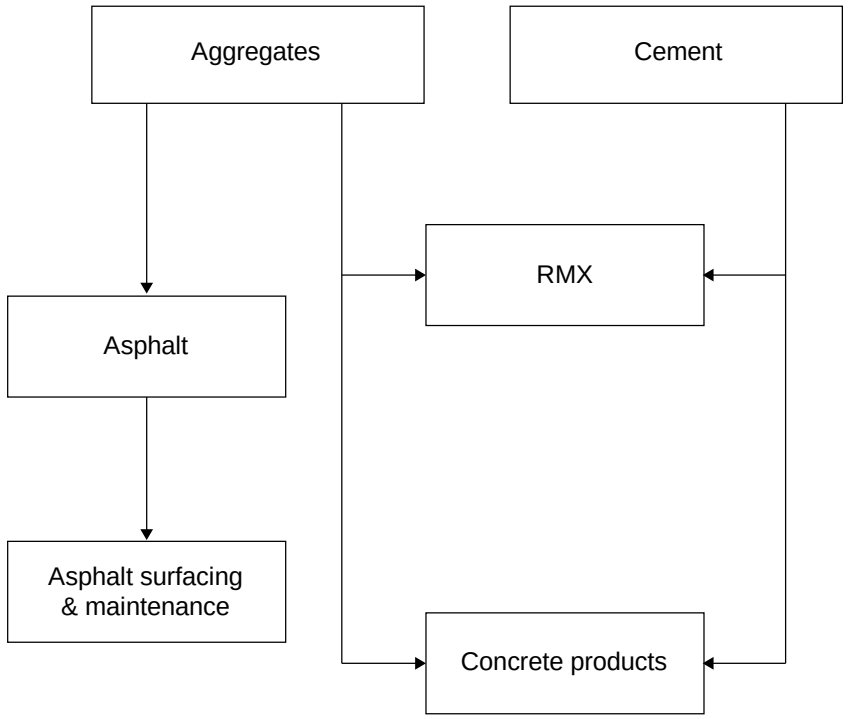
2.23 RMX can be produced *(a)* in a fixed plant and distributed to site by a concrete mixer; *(b)* in a mobile plant at (or near) the customer site (also known as a 'site plant'); or *(c)* in a volumetric truck which carries the ingredients separately and mixes them on site (also known as 'on-site batching'). Approximately 86 per cent of RMX is mixed at a dedicated plant then delivered to the customer's site, 9 per cent is supplied by volumetric trucks and 5 per cent is mixed at site plants (and supplied to the same site).[20]

Summary of key relationships between products

2.24 As explained in paragraphs 2.20 and 2.22, cement is a key input into the production of RMX, and aggregates are key inputs into the production of both RMX and asphalt. The most significant input relationships for the purposes of our assessment of the proposed joint venture are summarized in Figure 1.

FIGURE 1

Key construction material input relationships



Source: CC.

[20] CC calculations based on BDS Marketing Research Ltd (BDS) 2010 data. Figures add to more than 100 due to rounding.

Supply structure in the UK

2.25 The production and supply of cement, aggregates, asphalt and RMX in the UK is characterized by the involvement of five vertically integrated companies with national coverage ('the majors') comprising (in alphabetical order):

(a) Aggregate Industries UK Ltd (Aggregate Industries)—the UK operations of Holcim Limited, a global building materials producer listed on the SIX Swiss stock exchange;

(b) Cemex UK Operations Limited (Cemex)—the UK operations of Cemex SAB de CV, a global building materials company listed on the Mexican stock exchange;

(c) Hanson—we use this term to refer to both the UK operations of Hanson and the operations of HeidelbergCement AG, Hanson's ultimate parent company, which is a global provider of building materials and is listed on a number of German stock exchanges;

(d) Lafarge Group (through its UK Cement and Aggregates & Concrete divisions); and

(e) Anglo American's Tarmac business.[21]

2.26 All the majors produce aggregates, asphalt and RMX in the UK and they all (with the exception of Aggregate Industries) produce cement in the UK. Cemex, Hanson, Lafarge and Tarmac are the only producers of cement in the UK.

Anglo American

2.27 Anglo American is a global mining and industrial business. As set out above, Anglo American will contribute to the proposed JV its Tarmac business (comprising Anglo Industrial Mineral Holdings Limited, Tarmac Group Limited and their respective subsidiaries[22]).

2.28 Anglo American is headquartered in London[23] with a primary listing on the London Stock Exchange[24] and a current market capitalization of around £38 billion. For its financial year ended 31 December 2010 (FY10), Anglo American reported total consolidated revenues of US$32.9 billion and an EBITDA[25] of US$12.0 billion.[26]

---

[21] In this report, we use the term 'Tarmac' to refer to Anglo American's UK construction materials businesses which will be contributed to the proposed JV with Lafarge Group. Tarmac comprises Anglo Industrial Mineral Holdings Limited, Tarmac Group Limited and their respective subsidiaries. We use the term 'Tarmac Group' to refer to the international construction and heavy building materials operations of Anglo American, of which Tarmac is a part. (Our term 'Tarmac Group' should not be confused with Tarmac Group Limited, which is one of the holding companies that Anglo American will contribute to the proposed JV.)

[22] The two parent companies Tarmac Group Limited and Anglo Industrial Minerals Holdings Limited (both ultimately held by Anglo American) hold the group of companies being contributed to the proposed JV (ie Tarmac). They are holding companies with no commercial activities.

[23] www.angloamerican.com/about/ataglance.

[24] Anglo American has secondary listings on the Johannesburg Stock Exchange, the Swiss Exchange, the Botswana Stock Exchange and the Namibian Stock Exchange.

[25] Earnings before interest, tax, depreciation and amortization.

[26] Anglo American FY10 Annual Report.

The Anglo American business to be contributed to the proposed JV: Tarmac

2.29 Tarmac comprises Tarmac Group's entire UK operations with the exception of Tarmac Building Products Limited (TBP),[27] which is active in the production and sale of heavy building materials.[28] Anglo American will also contribute Tarmac Fleming Quarries Limited to the proposed joint venture, which has one mothballed aggregates quarry in the Republic of Ireland.

2.30 Tarmac is active in the production and sale of cement, aggregates, asphalt, RMX, and lime,[29] as well as providing services in asphalt surfacing and maintenance, and waste management. In FY10, Tarmac generated revenues of just over £1 billion, all of which was generated in the UK. Further details of Tarmac's financial performance are set out in Appendix B.

2.31 Tarmac has a number of JVs with third parties which will be transferred to the proposed JV with Lafarge Group (see Appendix C). Anglo American told us that these JV arrangements (including their current activities) were expected to transfer to the proposed JV with Lafarge Group unchanged.

2.32 Tarmac has around [✂] employees. During FY09, Tarmac reorganized itself into three main business divisions:

(a) Buxton Lime & Cement (BL&C), which is based in Buxton and has around [✂] employees. BL&C carries out Tarmac's cement, lime and HPL operations (see paragraph 2.18);

(b) UK Regions, which has around [✂] employees and carries out Tarmac's activities in aggregates, asphalt and RMX, as well as recycling. UK Regions is further divided into four multi-product operating regions: Central, North & Scotland, South East, and West regions; and

(c) National Contracting, which has around [✂] employees and provides asphalt surfacing and maintenance activities across the UK.

Tarmac's cement operations

2.33 Tarmac's cement operations are carried out by its BL&C division, which has one quarry and cement plant located in Tunstead, Derbyshire, with an annual production capacity at present of around [✂].

2.34 BL&C [✂] has [✂] depots (at [✂]), to which cement is delivered by rail. The cement is then transferred to road bulk tankers for onward distribution by road, as required.

2.35 In FY10 BL&C's production activities were as follows: chemical stone [✂], cement [✂], lime [✂] and limestone powders [✂].[30] In addition, BL&C produces some

---

[27] Whilst Tarmac and TBP are both part of the Tarmac Group, following an internal reorganization in FY09 Tarmac and TBP became stand-alone businesses and their shared services were separated.
[28] TBP's heavy building product activities include the production of mortar, concrete blocks, bagged aggregates, binding products, sports surfaces and foundry sands. Under the proposed JV arrangements, Tarmac, which [✂], will instead have a supply agreement in place with TBP (which will continue to apply in respect of the JV following the transaction) to ensure business continuity. Anglo American told us that it planned to divest its interest in TBP once an appropriate sale could be agreed.
[29] Lime (calcium oxide) is made by heating limestone (calcium carbonate) in a kiln at about 1,000ºC. It is used among other things in iron and steel manufacture, the production of construction materials (eg mortar and plaster), the food and drink industry and in water treatment. We found that there was no material overlap between Tarmac and Lafarge in either the production or supply of lime in the UK, given that Lafarge had no lime production activities in the UK and minimal activities in its sale.
[30] Chemical stone and limestone powders are both forms of HPL.

limestone aggregates for construction purposes which are subsequently sold to external customers by the Tarmac Central region (part of the UK Regions division).

2.36 Tarmac produces and supplies two grades of bulk grey cement: CEM I and CEM II, [✂].

2.37 Based on its total cement production of [✂] in FY10:

(a) [✂] went to Tarmac's downstream RMX operations;

(b) [✂] was sold externally; and

(c) [✂] went to TBP.[31]

2.38 Appendix D, Figure 1, provides further details of the flows of internally-produced and externally-purchased cement into Tarmac's downstream operations. Among other sources of externally produced cement, Tarmac receives cement 'under a contractual swap arrangement with [✂]', whereby Tarmac supplies cement to [✂] plants in the [✂] of England and [✂] supplies a corresponding volume to Tarmac's plants in the [✂] of England.

2.39 [✂] Tarmac sources its GGBS requirement [✂] from [✂], which is the only source of UK-produced GGBS. [✂] produces GGBS by grinding the granulated slag supplied to it by [✂].[32] In FY10, Tarmac purchased [✂].

2.40 Tarmac does not have any JV or partnership arrangements in relation to its cement activities.

Tarmac's aggregates operations

2.41 Tarmac produces and supplies land-based primary aggregates (ie sand, gravel and crushed rock), from its 105 aggregates quarries[33] in the UK. Tarmac operates a dredging business around the UK coast and owns four dredgers for the extraction of primary aggregates from the seabed (known as marine aggregates). These dredged marine aggregates are then offloaded on to wharves (and harbours) for further processing and/or onward sale. Tarmac also operates 38 recycling and secondary aggregates sites, as well as a small number of railheads (or rail-fed depots).[34]

2.42 In FY10, Tarmac's total aggregates production was [✂],[35] of which [✂] were sold externally, with the remaining [✂] sold internally to Tarmac's various downstream operations, and TBP,[36] as follows:[37]

(a) [✂] went to Tarmac's asphalt operations;

(b) [✂] went to Tarmac's RMX operations;

---

[31] [✂]
[32] [✂]
[33] Quarrying operations involve not only the extraction of material from the ground but also the crushing and screening processes that make the quarried material suitable for onward use.
[34] Railheads can be inward or outward. Inward railheads receive aggregates from nearby quarries for onward distribution by rail to outward railheads. Aggregates received at outward railheads are primarily for internal downstream uses either on site or at nearby locations, but in some more limited cases they are used for further external distribution to the point of demand by road.
[35] [✂]
[36] We define internal transactions as any transaction taking place: *(a)* between Tarmac's own operations, or *(b)* between Tarmac's operations and its JVs; and *(c)* between Tarmac and any Tarmac Group or Anglo American company, eg TBP.
[37] Due to rounding and sales between Tarmac entities, percentage figures do not add up to 100 per cent.

(c) [✂] went to TBP; and

(d) [✂] went to Tarmac's cement operations (ie BL&C).

2.43 Appendix D, Figure 1, provides further details of the flows of internally-produced and externally-purchased aggregates into Tarmac's downstream operations.

2.44 Tarmac has [✂] JVs or partnership arrangements which produce and/or supply aggregates.[38] Many of these JVs are with the other majors, which are also key competitors of Tarmac in the supply of aggregates in the UK. Further details of these JVs are set out in Appendix C. Anglo American told us that these arrangements 'enable Tarmac to share the fixed cost investment required for the extraction and production of aggregates'.

Tarmac's asphalt operations

2.45 Tarmac operates [✂] fixed[39] asphalt production sites.

2.46 Tarmac has in the past also used mobile asphalt plants[40] on occasion. [✂]

2.47 For the production of asphalt, whilst Tarmac sources all of its bitumen requirements from external suppliers, in FY10 around [✂] per cent of aggregates inputs were sourced internally from Tarmac's own aggregates operations (ie in total Tarmac used [✂] of aggregates for asphalt production of which [✂] were sourced internally—see Appendix D, Figure 1).

2.48 In FY10, Tarmac's asphalt operations produced [✂][41] of asphalt, of which [✂] was sold externally and [✂] was sold internally to Tarmac's National Contracting division.

2.49 In FY10, Tarmac's National Contracting division used a total of [✂] of asphalt for its road surfacing activities, of which [✂] was sourced from Tarmac's own asphalt operations, and [✂] was sourced from external suppliers. [✂]

2.50 Tarmac has several JV/partnership arrangements with Lafarge in relation to asphalt (see Appendix C).

Tarmac's RMX operations

2.51 Tarmac operates [✂] fixed RMX plants,[42] including one plant which is located on the site of a pre-cast concrete product producer that is dedicated to supplying this customer.

2.52 In FY10, Tarmac sold around [✂] cubic metres of RMX, with around [✂] per cent of RMX sales to external customers (see also Appendix D, Figure 1). Deliveries by

---

[38] In addition, Tarmac has a partnership with Hanson for an aggregates storage facility at King's Cross, London.
[39] [✂]
[40] Unlike a fixed asphalt plant, which is a fixed processing plant located at a quarry, depot or stand-alone site, a mobile asphalt plant is a processing plant which can be moved to a job or contract site for the period of the contract.
[41] This figure is not inconsistent with the [✂] of aggregates used by Tarmac for asphalt production, since both figures are approximate and do not take into account the following factors which affect the actual amount of aggregates used and the actual amount of asphalt produced: *(a)* asphalt wastage (either scrapped on site or returned by customers); *(b)* a small element of double-counting of aggregates from internal transfers of aggregates between sites; *(c)* the fact that not all aggregates supplied to Tarmac's asphalt plants were used at the end of FY10 and some were therefore held as inventory, and *(d)* the effects of rounding.
[42] The sites listed include some which are mothballed.

Tarmac from its RMX plants are made using RMX trucks[43] and minimix trucks (which have around half the capacity of RMX trucks).

2.53 For its production of RMX, Tarmac sourced around [✂] per cent of its entire aggregates requirement from its own aggregates operations in FY10 (ie Tarmac's total aggregate requirement was [✂], with [✂] being sourced internally). Tarmac's RMX operations required [✂] of cement in total in FY10, of which [✂] was sourced internally from Tarmac's BL&C division, and the remaining [✂] from external suppliers, namely [✂]. The flows of internally and externally sourced aggregates and cement into Tarmac's RMX business are shown in more detail in Appendix D, Figure 1.

2.54 Tarmac's [✂] JV in relation to RMX is described in Appendix C.

Lafarge Group

2.55 Lafarge Group is a multinational producer and supplier of construction and building materials focusing on cement, aggregates, concrete and gypsum. Lafarge Group is the ultimate parent company of Lafarge's UK construction materials businesses which will be contributed to the proposed JV.

2.56 Lafarge Group is headquartered in Paris and listed on the Paris Stock Exchange with a current market capitalization of around €9 billion. In FY10, Lafarge Group reported total consolidated revenues of €16.2 billion and EBITDA of €3.6 billion.

2.57 Lafarge Group manages its global operations along three business divisional lines:

(a) Cement (60 per cent of Lafarge Group's consolidated FY10 revenues);

(b) Aggregates & Concrete (31 per cent of FY10 revenues); and

(c) Gypsum (9 per cent of FY10 revenues).[44]

The Lafarge Group business to be contributed to the proposed JV: Lafarge

2.58 Lafarge Group will contribute its UK Cement and Aggregates & Concrete divisions to the proposed JV together with a small number of its other UK entities which are not active in the production and sale of construction materials (together, Lafarge).[45] In FY10, Lafarge generated total revenues of around €920 million (around 6 per cent of Lafarge Group's total consolidated revenues). Further details of Lafarge's financial performance are set out in Appendix B.

2.59 Lafarge operates its Cement and Aggregates & Concrete Divisions in the UK through two wholly-owned trading subsidiaries:

---

[43] [✂] volumetric trucks, which are vehicles that can carry aggregates, cement and water in separate compartments to the customer's site and mix the concrete on-site.

[44] Gypsum (calcium sulphate) is used in a wide variety of industrial applications, including in the production of plaster and plasterboard. Following its announcement in April 2011 of plans to sell its gypsum division, Lafarge Group completed the sale of its Asian and Australian gypsum businesses in July 2011, and combined its European and South American gypsum businesses (which in Lafarge's case includes Lafarge Group's UK Gypsum division) with those of Etex Group SA, with Lafarge Group retaining a 20 per cent stake in the combined entity. Lafarge Group has a mandatory holding period of five years for its 20 per cent stake, after which it has an option to sell its stake to Etex Group SA.

[45] These are: *(a)* Island Barn Aggregates Limited (a JV), which will no longer be active in construction materials following an exhaustion of reserves during 2010); *(b)* Blue Circle Ebbsfleet Limited and Blue Circle Properties Limited, which are purely investment or property holding companies; *(c)* Hertfordshire Road Maintenance Limited, which is not active in construction materials; and *(d)* LAL-GRS Limited (a [✂] JV between GRS (Roadstone) Limited and Lafarge Aggregates Limited), which is active in inert waste disposal.

(a) Lafarge Cement UK plc's UK operations (the UK Cement division), which produces and supplies cement; and

(b) Lafarge Aggregates Limited (the UK Aggregates & Concrete division), which conducts the business of all its UK operations in aggregates, asphalt, RMX, and road contracting and waste disposal services.

2.60 The following Lafarge Group interests, which include activities in the construction materials sector, will not be contributed to the proposed JV:

(a) the UK Gypsum division[46] and its UK businesses which are active in the production of anhydrite binders and suspended ceilings;[47] and

(b) the freehold interests in Lafarge Group's Medway Greenfield site in Kent, which has received planning consent for a new cement plant. Lafarge Group will instead grant the JV entity a [✂] option to enter into a lease agreement to develop and use the Medway site; and

(c) As part of the proposed transaction all non-UK subsidiaries owned by Lafarge[48] will be transferred to Lafarge Group.

2.61 Lafarge has around 2,800 employees in total, of which shared support services account for around 180 staff.[49] The UK Cement division has 1,047 employees and the UK Aggregates & Concrete division has 1,580 employees and is further divided into three business units: Aggregates, Asphalt & Contracting and RMX.

Lafarge's cement operations

2.62 In Great Britain, Lafarge operates four cement plants (Hope, Cauldon, Dunbar and Aberthaw),[50] 12 cement depots[51] and two cement import terminals.[52] In Northern Ireland, Lafarge operates one cement plant (Cookstown) and one depot. Lafarge told us that its UK cement plants had an annual production capacity of around 4.5Mt. Lafarge produces both CEM I and CEM II for bulk cement sales[53] and CEM II for most of its bagged cement sales. Lafarge does not produce lime, but acts as a reseller for a small amount of bagged lime that it purchases from various third parties.

2.63 In FY10, Lafarge's Cement division sold [✂] of cement, of which [✂] was accounted for by external sales and [✂] by internal sales.

2.64 For the production of blended (ie non-CEM I) cement:

(a) Lafarge imports a maximum of around [✂] each year of GGBS under a short-term contract with [✂], which is based in [✂].

---

[46] The UK Gypsum division is operated through the Lafarge Plasterboard Limited subsidiary.
[47] These businesses were contributed to the separate unrelated transaction described in the footnote to paragraph 2.57.
[48] Lafarge Cement UK plc legally owns certain Malaysian and Nigerian subsidiaries.
[49] Based on Lafarge's total employees of 2,800 less the 970 and 1,250 employees at its two divisions.
[50] Lafarge's cement plants are located on the site where the key raw materials (limestone and shale) are extracted, and then processed to form clinker and then cement. These plants also have facilities to store, blend, pack and dispatch cement. In addition, Lafarge has a cement plant at Barnstone that does not have its own kiln, but instead uses raw materials from Lafarge's other cement plants to produce value-added cement products.
[51] Most of Lafarge's depots (cement storage and dispatch points) have a rail connection to receive cement from the plant to the depot, but can also be supplied with cement by road tankers and by boat (depending on the depot's location).
[52] A cement import terminal imports finished cement products (received by vessels with a capacity of up to 20Kt) and supplies customers directly. Import terminals can have facilities for storing, blending, packing and dispatching cement.
[53] In FY10, around 60 per cent of Lafarge's total bulk sales were CEM I and around 70 per cent of Lafarge's external bulk sales were CEM I.

(b) Lafarge purchases PFA through a variety of JVs, partnerships and supply agreements. In Scotland, Lafarge has a [✂] JV, ScotAsh, with ScottishPower,[54] which owns a power station from which ash is extracted and converted into PFA as an input into Lafarge's cement production at its Dunbar cement plant. Other arrangements in relation to PFA exist for South Wales and Nottinghamshire.[55]

2.65 Lafarge's partnership arrangements with third parties in relation to its cement operations are described in Appendix C.

Lafarge's aggregates operations

2.66 Lafarge operates 34 active aggregates quarries, three marine aggregates wharves, 13 depots and three aggregates recycling sites, with additional recycling activity taking place on an occasional basis at Lafarge quarries and depots. Together, these operations produce around [✂] of aggregates a year. Lafarge's aggregates operations primarily consist of the extraction of minerals and the production of crushed rock[56] and sand and gravel, but also involve other activities including landfill[57] and recycling operations which process waste materials to produce recycled aggregates for sale to customers. Lafarge does not produce any secondary aggregates.

2.67 In FY10, internal sales of aggregates to Lafarge's own downstream RMX operations accounted for [✂] per cent of aggregates revenues, while internal sales to its downstream asphalt operations accounted for [✂] per cent of aggregates revenues with the balance largely accounted for by external sales. See also Appendix D, Figure 2.

2.68 Lafarge has several JV or partnership arrangements in place in relation to aggregates (see Appendix C).

2.69 Lafarge Group also has a 48 per cent stake in Carrières de la Vallée Heureuse, an aggregates producer in northern France, which exports aggregates (around 50Kt to 100Kt a year) to the UK. This stake will not be contributed by Lafarge Group to the proposed JV.

Lafarge's asphalt operations

2.70 Lafarge currently operates 15 fixed asphalt plant sites and owns three mobile[58] asphalt plants.

2.71 Lafarge estimated that in FY09, its asphalt plants sourced around [✂] per cent of their aggregates needs internally (excluding those aggregates sourced from Lafarge's JVs). See also Appendix D, Figure 2.

2.72 Details of Lafarge's JVs and partnership arrangements in relation to asphalt are set out in Appendix C.

---

[54] www.scotash.com/about_scotash.html.
[55] Lafarge has a supply agreement with RWE to supply ash to its Aberthaw cement plant (South Wales); and a [✂] JV with Cemex at EDF's power stations (Nottinghamshire).
[56] Crushed rock includes granite and limestone, as well as high PSV, which is mainly sold to its asphalt operations.
[57] Waste and landfill sites are usually located within a quarry. Materials are transported to and deposited in the void space created by the quarrying operation.
[58] Lafarge's mobile plants are used from time to time on airfield contracts or major projects.

Lafarge's RMX operations

2.73 Lafarge currently has 92 active fixed RMX plants, and two additional RMX plants which are located on the sites of pre-cast concrete producers dedicated to supplying those customers. Lafarge also operates five mobile RMX plants. In addition, Lafarge operates three local minimix businesses serving the Midlands, the North-East and Manchester, Leicester and Nottingham, which supply RMX in minimix trucks to local customers.

2.74 Lafarge sells around [✂] cubic metres of RMX a year, with revenues largely from external sales, with a small amount of internal sales to its asphalt paving business.

2.75 During FY10, Lafarge's RMX plants sourced their aggregates and cement requirements mainly from Lafarge's own upstream operations ([✂] per cent and [✂] per cent of total requirements respectively).

2.76 Lafarge has no JVs[59] or partnership arrangements in respect of its RMX production activities.

3. The merger and the relevant merger situation

Outline of merger situation

3.1 As set out in paragraphs 2.29 to 2.54 and 2.58 to 2.76, Anglo American's and Lafarge Group's UK activities in aggregates, asphalt, RMX, cement, waste management and asphalt surfacing would be contributed to the proposed JV. Excluded from the proposed JV are Anglo American's UK activities in building products (ie its TBP subsidiary), and Lafarge Group's UK activities in gypsum (ie plaster, plasterboard, plaster blocks and joint compounds).[60] The pro forma FY10 revenues for the proposed JV would be around £2 billion with EBITDA of around £210 million.

3.2 Anglo American and Lafarge Group would each hold a 50 per cent stake in the proposed JV's share capital with equal representation on the board.

3.3 A condition precedent for completion of the transaction is regulatory clearance from the relevant competition authorities. The main parties have stated that 'Both Lafarge UK and Tarmac UK operations will continue to operate independently until obtaining such approvals'.

3.4 Further details of the structure of the proposed JV are set out in Appendix E, along with an outline of the events leading up to the proposal to create the JV.

The rationale for the joint venture

Anglo American's rationale

3.5 Following an internal restructuring in October 2009 to streamline its management structure and focus on its core mining portfolio, Anglo American formed seven core business units: Platinum, Diamonds, Copper, Nickel, Iron Ore & Manganese, Metallurgical Coal and Thermal Coal. The restructuring also set in motion a planned

---

[59] [✂]

[60] Lafarge Group has announced plans to sell Lafarge Plasterboard Limited and Lafarge Gyvlon Limited to Etex Group SA. This will be executed through the combination of Lafarge Group's and Etex Group SA's European and South American gypsum businesses. Lafarge Group will retain a 20 per cent stake in the combined entity for a minimum five years.

divestment programme for a number of its non-core assets,[61] among them Tarmac Group, its international construction and heavy building materials arm, of which Tarmac (the business to be contributed to the proposed JV) is a part.

3.6 [✂]

3.7 Anglo American's strategy to dispose of its non-core international Tarmac Group businesses is documented in both its market announcements and internal documents. [✂]

Lafarge Group's rationale

3.8 In their joint Initial Submission, the main parties stated that 'Lafarge is seeking to expand its aggregates quarrying activities and its production of asphalt and RMX within the UK', and therefore the proposed JV 'will provide an opportunity for Lafarge to expand its geographic footprint in an important area for its business, to expand the sale of its research-driven products through the wider distribution base and achieve logistical efficiencies'. Lafarge Group also stated that the proposed JV would provide an opportunity to 'achieve significant cost synergies' and [✂].

3.9 The proposed JV also [✂]. We do not consider that such a development ([✂]) would materially alter our assessment of the effect of the proposed JV on competition, because the competition assessment would be the same [✂].

3.10 [✂] Lafarge also told us that the significant growth in size and geographical reach of the JV entity's RMX business compared to Lafarge at present would create additional distribution channels for Lafarge's value-added RMX products (for example, self-levelling RMX). An internal Lafarge Group document described the transaction as a [✂].

3.11 The main parties told us that the proposed JV would bring together two broadly complementary businesses, which would:

(a) enable the main parties to realize synergy benefits; and

(b) allow the proposed JV to be more efficient and competitive than the main parties on an individual basis. [✂]

3.12 Further details of the main parties' estimates of the synergy benefits arising from the proposed JV are set out in Appendix E.

Jurisdiction

3.13 Under section 36(1)(a) of the Act, and pursuant to our terms of reference (see Appendix A), we are required to investigate and report on whether arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation as defined by the Act.

3.14 Section 23 provides that a relevant merger situation is created if:

(a) two or more enterprises have ceased to be distinct within the statutory period for reference; and

[61] Anglo American's non-core assets together accounted for around 7 per cent of its consolidated FY10 EBITDA.

(b) if either the share of supply test or the turnover test specified in that section of the Act is satisfied.

3.15 We are satisfied that each of the businesses that Anglo American and Lafarge intend to contribute to this proposed JV constitutes an enterprise for the purposes of the Act.

3.16 Enterprises will 'cease to be distinct' if they are brought under common ownership or control (section 26 of the Act). In the case of this JV, each of the main parties will hold 50 per cent of the ordinary share capital and will have equal representation on its board of directors. Therefore the enterprises forming the joint venture will cease to be distinct and Anglo American and Lafarge together will enjoy common ownership and control of the combined enterprises.

3.17 The share of supply test in section 23(3) is met if, as a result of the JV, the enterprises ceasing to be distinct have a share of supply of goods or services of any description in the UK, or in a substantial part of the UK, of at least one-quarter, or if one of the enterprises already supplied at least one-quarter, it must have increased its share as a result of the joint venture.

3.18 Tarmac and Lafarge both supply cement, aggregates, RMX and asphalt, and a number of specific subcategories of aggregates. According to figures provided by the main parties (based on their own data, BDS data and the main parties' estimates), in bulk cement on a UK basis, Lafarge's share of supply in 2010 was [✂] per cent and Tarmac's share of supply was [✂] per cent; Tarmac had a UK share of supply of asphalt of [✂] per cent in 2010 with Lafarge holding a share of [✂] per cent; and UK shares for RMX in 2010 amounted to [✂] per cent for Tarmac and [✂] per cent for Lafarge. As such, the JV entity would have increased shares of UK supply in bulk cement, asphalt and RMX compared with Tarmac and Lafarge, and its shares of supply would be greater than one-quarter in relation to each of these products.

3.19 We therefore concluded that the proposed JV would result in the creation of a relevant merger situation pursuant to section 23(1) of the Act.

4. The counterfactual

4.1 We considered what would be likely to have happened in the absence of the merger ('the counterfactual'). The CC's merger assessment guidelines[62] (the Guidelines) state that, in assessing the counterfactual, events or circumstances and their consequences should be foreseeable.[63] Furthermore, in making a judgement on the likely counterfactual, several possible scenarios may be examined, but only the most likely scenario will be selected as the counterfactual.[64]

4.2 In this section, we set out our assessment of Anglo American's and Lafarge Group's plans for the businesses they intend to contribute to the JV, had the JV not been proposed.

[62] Merger Assessment Guidelines, CC2, www.competition-commission.org.uk/assets/competitioncommission/docs/pdf/non-inquiry/rep_pub/rules_and_guide/pdf/100916_merger_assessment_guidelines.pdf.
[63] The Guidelines, paragraph 4.3.2.
[64] The Guidelines, paragraph 4.3.6.

Anglo American's plans for Tarmac absent the proposed JV

4.3 Anglo American told us that, since the announcement of its intention to dispose of Tarmac in 2007, it had been considering various exit options. [✂]

4.4 [✂]

4.5 [✂]

4.6 Further details of Anglo American's plans for Tarmac absent the proposed JV are set out in Appendix F.

Lafarge Group's plans for Lafarge absent the proposed JV

4.7 In its JV press release announcement, Lafarge Group stated that the proposed JV 'illustrates [Lafarge Group's] strong commitment to the UK market'. There was no evidence to suggest that Lafarge would have pursued another major JV or acquisition to rebalance its product portfolio absent the proposed JV.

4.8 Lafarge Group's Medway Greenfield site[65] in Kent has the benefit of planning permission dating back to November 2001 for the winning and working of minerals comprising chalk, chalk marl and clay from the quarry and construction of a new 1.4Mt cement plant. Further details of Lafarge's plans for this site are set out in Appendix F.

Our conclusions on the counterfactual

4.9 [✂], we considered that for the foreseeable future, Tarmac would remain under Anglo American's ownership.[66] This is because market conditions (in both the credit and the relevant product markets) do not appear to have improved significantly since [✂] to allow Anglo American to dispose of Tarmac on terms it would been likely to find favourable. Further, in their joint Initial Submission, the main parties stated that, based on production forecasts to 2014, difficult market conditions were expected to continue for each of their aggregates, asphalt, RMX and cement product categories.

4.10 We did not consider that Anglo American's potential expansion plans at Tunstead were sufficiently certain or near-term to form part of an appropriate and foreseeable counterfactual, given the lead time to bring the second kiln into operation and the prevailing market conditions.[67]

4.11 We found no evidence that Lafarge Group was seeking an alternative JV or major acquisition absent the proposed JV and we noted [✂]. Therefore, absent the proposed JV, we expected the prevailing pre-merger conditions for Lafarge to continue.

4.12 In addition, we considered it unlikely that Lafarge would proceed with building a new cement plant at its Medway site in the absence of the proposed JV, given prevailing market conditions and the capital outlay required.

---

[65] The Medway site will not be contributed to the JV. However, Lafarge Group will grant a [✂] option for the JV to enter into a lease agreement for the Medway site, [✂].
[66] Even if Anglo American had been able to sell Tarmac, the structure of the market would remain unchanged if the purchaser were not an existing competitor in the UK construction materials market.
[67] We noted that UK demand for cement was currently low compared with historical levels and that demand could increase in future. We considered the possibility of Anglo American expanding its Tunstead cement plant in future as part of our competitive assessment of the proposed JV (see paragraphs 6.253 to 6.256).

4.13 In light of paragraphs 4.9 to 4.12, we therefore concluded that, had the proposed JV not been proposed, the prevailing competition between Tarmac and Lafarge would have been likely to continue largely unchanged.

5. Market definition

5.1 The Guidelines state that the purpose of market definition in a merger inquiry is to provide a framework for the analysis of the competitive effects of the merger.[68] The Guidelines go on to state that the CC will identify the market within which the merger may give rise to an SLC (the relevant market). In defining the relevant market, we will aim to include the most relevant constraints on behaviour of the merger firms. The Guidelines explain that, in assessing whether a merger may give rise to an SLC, the CC may take into account constraints outside the relevant market, segmentation within the relevant market, or other ways in which some constraints are more important than others.[69]

5.2 The Guidelines also note that, in practice, the analysis leading to the identification of the market or markets and assessment of competitive effects will overlap, with many of the factors affecting market definition being relevant to the assessment of competitive effects and vice versa.[70] Market definition and the assessment of competitive effects should not be viewed as two distinct analyses.

5.3 In this section we identify the relevant markets in which we have assessed the effects of the proposed JV and the reasons why we have identified those markets. We also signpost where we have addressed certain issues in our competitive assessment rather than in the context of market definition. These issues have been considered as part of our competitive assessment rather than as part of our analysis of market definition to the extent that we have considered this to be more appropriate and given that the Guidelines do not view these as distinct types of analysis.

5.4 In accordance with the Guidelines,[71] we will define the relevant product markets with reference in particular to demand-side substitution (ie the ability and willingness of customers to switch to other products). The starting point of the analysis of substitution will be the products, narrowly defined, which the JV partners both produce ie the overlap products (see paragraph 2.2). We will then assess whether it is appropriate to consider wider markets around these narrowly defined overlap products.[72] In this analysis, we may also take into account supply-side substitution to the extent that:

(a) suppliers may easily and quickly shift production between products; and

(b) the same suppliers compete to supply the products concerned and the conditions of competition are the same for each product.[73]

5.5 We will consider the geographic extent of the relevant product markets we identify in our competitive assessment.

---

[68] The Guidelines, paragraph 5.2.1.
[69] The Guidelines, paragraph 5.2.2.
[70] The Guidelines, paragraph 5.1.1.
[71] The Guidelines, paragraphs 5.2.6, 5.2.7 & 5.2.17.
[72] The Guidelines, paragraph 5.2.11.
[73] The Guidelines, paragraph 5.2.17.

The relevant product markets for cement

5.6 In order to define the relevant product market(s) for cement, we considered the extent of demand-side (and. where appropriate, supply-side) substitutability between:

(a) different types of (bulk) cement;

(b) different forms of packaging of cement (ie bulk cement and bagged cement); and

(c) domestically-produced and imported cement.

Substitutability between types of (bulk) cement

5.7 The main parties told us that there was a single relevant market for all types of grey cement.

5.8 We investigated the extent to which CEM II and CEM III were substitutes for CEM I, with a focus on bulk cement.[74] In particular, we assessed the evidence regarding:

(a) whether and to what extent customers were able and willing to switch between CEM I and CEM II or CEM III cements (also known as blended cements) in response to price changes;

(b) whether some customer groups, defined in terms of the applications for which cement is used, were more 'locked in' to the use of CEM I as opposed to blended cements than others. If this were the case (and if suppliers could target different prices at different customers), we might have needed to consider the existence of different competitive constraints for different groups of customers; and

(c) the degree of supply-side substitution between cement types.

5.9 We took into account evidence from the main parties, third parties and our survey (see full evidence in Appendix G).

5.10 We found that there was a degree of demand-side substitutability between cement types, but that the ability and willingness of customers to switch from CEM I to other types of cement differed depending on the application (being, for example, higher for RMX producers).

5.11 In relation to supply-side substitution, we found that:

(a) Cement producers appeared to have different abilities to source the various cementitious products which are required to produce CEM II and CEM III. In particular, PFA appeared to be more accessible than GGBS, in that there was only one ultimate source of UK-produced GGBS while there were multiple sources of UK-produced PFA. The conditions of competition in the supply of different types of cement were therefore likely to be different.

(b) Subject to point *(a)*, and provided that the required facilities were in place, producers appeared to be able to easily switch the production from CEM I to other types of cement.

[74] We examine the distinction between bulk and bagged cement in paragraphs 5.13 to 5.15 of our market definition analysis.

5.12 We concluded that, for the purposes of assessing the proposed JV, all types of (bulk) cement formed part of the same relevant product market. However, we also noted that: *(a)* CEM I was the main input for the production of the other types of cement; and *(b)* the ability and willingness of customers to switch from CEM I to other types of cement appeared to differ depending on the application. Therefore, in the competitive assessment, we also considered the competitive constraints arising for CEM I separately.

Substitutability between bulk and bagged cement

5.13 The main parties told us that, while there was a degree of supply-side substitutability between bulk and bagged cement (with most suppliers having the equipment in place to supply both forms and the ability to switch relatively quickly), from a demand-side perspective substitutability was limited. Consequently, the main parties considered that it was appropriate to distinguish between bulk and bagged cement.

5.14 We took into account evidence from the main parties and third parties (see full evidence in Appendix G).

5.15 We found that there was very little, if any, demand-side substitutability between bulk and bagged cement. Overall, on the basis of a lack of demand-side substitutability, we found that, for the purposes of assessing the proposed JV, bulk and bagged cement belonged to different relevant product markets.

Substitutability between domestically-produced and imported cement

5.16 The main parties told us that no distinction should be made between imported and domestically-produced cement as, from a demand-side perspective, the two sources were fully substitutable and competed directly with each other.

5.17 We examined the extent to which domestically-produced and imported cement were substitutes for each other. Given that the majority of imported cement is bulk cement, we focused on the constraints placed by imported bulk cement on domestic bulk cement rather than on bagged cement.[75] We assessed whether customers were able and willing to switch between imported and domestically-produced cement in relation to the quality of the product and the reliability and security of its supply.[76]

5.18 We took into account evidence from the main parties, third parties and our survey (see Appendix G for full evidence).

5.19 We found that, in relation to the proposed JV, it was not appropriate to segment the relevant product market into domestic and imported cement on the basis of quality or security of supply differences. However, we also noted that price differences and availability of imports in certain geographic areas might limit the competitive constraints exerted by imported cement on domestically-produced cement. We will consider these constraints in the competitive assessment.

[75] The main parties told us that imports of grey cement were typically (although not always) transported in bulk form in cargo ships. From the import terminal, cement would then be distributed to customers in bulk form or packed into bags at the import terminal.
[76] The ability and willingness of customers to switch between imported and domestically-produced cement depending on the relative prices of the two products (and customers' locations) is analysed in our competitive assessment.

The relevant product markets for cement: conclusions

5.20 We concluded that the relevant cement product markets for the purposes of assessing the proposed JV were:

(a) the market for the supply of bulk cement (which includes all types of cement as well as domestically-produced and imported cement); and

(b) the market for the supply of bagged cement (which includes all types of cement as well as domestically-produced and imported cement).

5.21 However, we recognized that differing constraints might characterize different products within these markets (see paragraphs 5.12 and 5.19). We will consider these constraints in the competitive assessment.

The relevant product markets for aggregates

5.22 As set out in paragraphs 2.17 and 2.18, aggregates may be divided into two high-level categories based on their end-use, namely construction aggregates and aggregates used in specialist applications. We considered these two categories to be sufficiently distinct from each other so that it was appropriate to conduct our product market analysis separately for each of them. In particular, aggregates used for construction applications cannot generally be substituted for aggregates used in specialist applications on either the demand or the supply side.

Aggregates used in construction applications

5.23 We examined whether different types of construction aggregates are part of the same relevant product market. We reviewed evidence from the main parties, third parties, market data and our survey on the extent to which:

(a) secondary and recycled aggregates were substitutes for primary aggregates;

(b) crushed rock aggregates and sand and gravel aggregates were substitutes; and

(c) different grades of aggregates were substitutes for each other.

5.24 There are specific requirements for aggregates used in each of the four sub-categories of construction application set out in paragraph 2.17 (ie general construction uses, the production of RMX, the production of other concrete products and the production of asphalt). Therefore we considered that the degree of substitution between different types and different grades of aggregate was likely to vary depending on the application, and that the evidence on substitutability should be assessed separately for each application.

Demand-side substitutability between primary and secondary/recycled aggregates

5.25 The main parties submitted that there was a single product market for construction aggregates which included primary, secondary and recycled aggregates. Appendix G sets out the full evidence we took into account in assessing the degree of demand-

side substitutability between primary and secondary/recycled aggregates, which came from the main parties, third parties and our survey, as well as market data.[77]

5.26 Taking all the evidence together, we found that:

(a) Aggregate input requirements varied significantly across applications.

(b) There had been some switching from primary to secondary and recycled aggregates, as evidenced by the decline in the share of primary relative to secondary/recycled aggregates and our survey results, but switching appeared to have levelled off since 2008.

(c) There appeared to be more scope for switching to recycled and secondary aggregates for general construction uses than for RMX production and for asphalt production. For general construction uses, there is a high (slightly less than 50 per cent) penetration of secondary and recycled aggregates. Our survey confirmed that about half of aggregate customers (other than RMX and asphalt producers) had switched from primary to recycled/secondary aggregates in the past three years (although our survey did not explore the proportions of volumes switched). However, our survey also suggested that the scope for further switching to secondary and recycled aggregates might be more limited: 73 per cent of aggregate customers, and 83 per cent of RMX competitors, said that they could not switch any purchases to secondary/recycled aggregates, or that they could switch only a quarter or less of their purchases.

5.27 On balance, we considered that, while recycled and secondary aggregates did to some extent constrain primary aggregates for some uses, these constraints were not sufficient for us to conclude that overall, primary, secondary and recycled aggregates were all in the same relevant product market. We therefore concluded that, in relation to the proposed JV, the relevant product market for primary aggregates did not include secondary and recycled aggregates. However, we did consider any competitive constraint posed by secondary and recycled aggregates on primary aggregates in our local competitive effects analysis (see paragraphs 6.6 to 6.35).

Demand-side substitutability between crushed rock and sand and gravel

5.28 We considered whether there were separate markets for crushed rock and sand and gravel aggregates.

5.29 As can be seen from the data in Table 5 in Appendix G, for some applications of construction aggregates (RMX production and concrete products production), crushed rock and sand and gravel aggregates are both used in substantial proportions. However, for other applications (asphalt production and general construction), crushed rock appears to be the main primary aggregate used. We therefore examined whether the scope for demand-side substitution from crushed rock to sand and gravel might be limited for certain applications (and in particular asphalt production).[78]

5.30 The main parties submitted that crushed rock and sand and gravel aggregates were used interchangeably depending upon the grade required and local availability. We

[77] There is no scope for supply-side substitution from recycled and secondary aggregate production to primary aggregate production, so we did not consider this further.
[78] For geological reasons, there is limited scope for supply-side substitution between crushed rock and sand and gravel, so we did not consider it.

looked at the main parties' evidence alongside data from our survey and other available evidence (see full evidence in Appendix G).

5.31 We found that the scope for substitution between crushed rock and sand and gravel depended primarily on the application (though we noted that local availability of the products affected to some extent the proportion in which the different products were used in different regions). For asphalt production, there appeared to be very limited scope for substituting from crushed rock to sand and gravel aggregates. For RMX production, the two types of primary aggregates appeared to be used interchangeably in many cases.

5.32 On balance, we concluded that, in relation to the proposed JV, crushed rock and sand and gravel aggregates should be considered part of the same relevant product market for primary aggregates. However, in view of the limited substitutability between crushed rock and sand and gravel for certain applications (especially asphalt production), in the competitive assessment we consider the possible different competitive constraints arising for these two market segments, as well as specific products within these segments (see paragraphs 6.6 to 6.35).

Substitutability between grades

5.33 We considered evidence on whether different grades of primary aggregates were in the same relevant market.

5.34 The main parties told us that, for market definition purposes, there should be no distinction between different grades of aggregate. We took into account evidence from the main parties, third parties and our survey in our assessment (see Appendix G).

5.35 All the evidence we received suggested that different grades were unlikely to be easily substitutable on the demand side. We therefore examined whether different grades (of the same type of primary aggregate) were supply-side substitutes. Supply-side substitutability depends on: *(a)* how easy and quick it is for producers to switch production from coarse to fine and from fine to coarse aggregates; and *(b)* whether the same suppliers compete to supply these products and the conditions of competition are the same for each product.

5.36 The evidence submitted to us on supply-side substitutability suggested that: *(a)* fine and coarse aggregates were not typically quarried separately and the production of one typically involved the production of the other, although the grade could vary; and *(b)* within an aggregate quarry there was some scope to switch production from coarse aggregates to fine aggregates, but this entailed additional costs. On balance, although supply-side substitution seemed to be constrained to some extent, we concluded that, in relation to the proposed JV, different grades of the same type of primary aggregate should be considered part of the same relevant product market.

Summary: product market definition for aggregates used in construction applications

5.37 We concluded that, for construction aggregates, the relevant product market in relation to the proposed JV is the market for the supply of primary aggregates (of all grades).

5.38 However, we recognized that differing constraints might characterize different products within this market and constraints might also arise from products outside this market. For this reason, in our competitive assessment we consider a market seg-

mentation into crushed rock and sand and gravel and we consider specific products within these two segments. We also consider the possible constraints arising from secondary and recycled aggregates when available in a given geographic market (see paragraphs 6.6 to 6.35 and Appendix I).

Aggregates used in specialist applications

High PSV aggregates

5.39 In the OFT's reference decision (the Reference Decision),[79] it explained that it did not consider that the proposed JV would give rise to competition concerns in the supply of high PSV aggregates given Lafarge's limited production of high PSV aggregates and the existence of sufficient competition from other suppliers. In our issues statement,[80] we noted that we did not propose to look separately at high PSV aggregates in light of the preliminary analysis carried out by the OFT and the lack of concerns from competitors and customers at that point in the inquiry. Having received no specific concerns about the effect of the proposed JV on competition for the supply of high PSV aggregates following publication of our issues statement, we did not undertake any market definition analysis for them and they are not considered further in this report.

Rail ballast

5.40 The main parties submitted that there was a separate product market for rail ballast. They noted, however, that rail ballast represented only a part of the output of the quarries from which it was produced, reflecting the multiple product grades that were necessarily produced at the same time. We examined evidence from the main parties and third parties (see Appendix G for a full discussion) and concluded that, in relation to the proposed JV, there was a separate relevant product market for the supply of rail ballast, which was distinct from all other (primary) aggregates.

High purity limestone

5.41 The main parties argued that HPL was a primary product, interchangeable for a number of different applications. In particular, the main parties did not consider that HPL for FGD applications (see paragraph 2.18) represented a separate market from HPL for the other uses. Further details of the main parties' and third parties' views on HPL are set out in Appendix G.

5.42 In light of the evidence set out in Appendix G, we concluded that, on the basis of supply-side substitution considerations and in relation to the proposed JV, there was a separate relevant product market for the supply of HPL (of all grades) for industrial purposes, which is distinct from all other (primary) aggregates. We recognized that the extent to which customers could switch between different grades of HPL depended on the specific application in which HPL was used, and that for FGD uses, in particular, the specification of the product was tight. We therefore considered in our competitive assessment whether the competitive constraints for this specific use of HPL were different (see paragraphs 6.71 to 6.83).

---

[79] 'Proposed joint venture between Anglo American Plc and Lafarge S.A: Decision under section 33 of the Enterprise Act 2002, 2 November 2011', www.oft.gov.uk/shared_oft/mergers_ea02/2011/anglo-american-lafarge.pdf.
[80] www.competition-commission.org.uk/our-work/anglo-american-lafarge/.

The relevant product market for asphalt

5.43 In order to define the relevant product market for asphalt, we assessed:

(a) whether asphalt produced at mobile plants was a substitute for asphalt produced at fixed plants; and

(b) whether asphalt produced at non-24/7 plants was a substitute for asphalt produced at 24/7 plants.

5.44 The main parties submitted that there was a single product market for the production and supply of asphalt.

5.45 Taking into account evidence from the main parties, third parties and our survey (see Appendix G), we concluded that, in relation to the proposed JV, it was appropriate to define a single relevant market for the supply of asphalt produced either by fixed or by mobile plants (although we noted that they appeared to serve different segments of the market in terms of type and size of the project in which they were used, with mobile plants typically being used for large-volume highway, airfield or airport projects). We did not consider it appropriate to define a separate market for asphalt produced by 24/7 plants.

The relevant product market for RMX

5.46 In order to define the relevant product market for RMX, we assessed:

(a) whether RMX produced at site plants[81] was a substitute for RMX produced at fixed plants; and

(b) whether RMX produced by volumetric trucks was a substitute for RMX produced by (fixed and site) plants.

5.47 The main parties submitted that there was a single relevant market for the supply of RMX.

5.48 Taking into account evidence from the main parties, third parties and our survey (see Appendix G), we concluded that, in relation to the proposed JV, it was appropriate to define a single product market for the supply of RMX (produced either by fixed or by site plants), which did not include volumetric trucks. However, we considered any competitive constraint posed by volumetric trucks in our local competitive effects analysis (see paragraphs 6.92 to 6.101).

5.49 In relation to fixed and site RMX plants, we noted that they appeared to serve different segments of the market (in terms of the size of the project on which they are used, with site plants being typically used for large-volume projects).

5.50 In relation to volumetric trucks, we noted that not only did they appear to serve a different segment of the market (ie small-volume projects), but the product itself was perceived to be of a lower quality in terms of specification and strength by the majority of third parties we contacted. For these reasons, we considered that volumetric trucks were likely to pose a limited constraint on RMX produced by fixed (and site) plants. Taking both these factors into account, we considered that, in

[81] In what follows we include in our definition of RMX site plants both plants located long term at customer sites and those located at customer project sites for shorter-term use (the latter are sometimes also referred to as mobile RMX plants).

relation to the proposed JV, volumetric trucks should not be included in the relevant market for the supply of RMX. However, as set out above, we consider the competitive constraints exerted by volumetric trucks in our competitive assessment.

Summary of conclusions on the relevant product markets

5.51 For the reasons set out in paragraphs 5.6 to 5.50, we concluded that the relevant markets for the purposes of our inquiry were:

(a) the supply of bulk cement;

(b) the supply of bagged cement;

(c) the supply of primary aggregates (of all grades) for construction applications;

(d) the supply of rail ballast;

(e) the supply of high purity limestone;

(f) the supply of asphalt (produced either by fixed or by mobile plants); and

(g) the supply of RMX (produced either by fixed or by site plants).

5.52 Paragraphs 5.12, 5.19, 5.38, 5.42 and 5.50 explained the segmentations within these markets that we considered to be appropriate, and how we took into account certain constraints from outside these markets in our competitive assessment of the proposed JV.

6. Assessment of the competitive effects of the proposed JV

Theories of harm

6.1 The Guidelines explain theories of harm (TOH) as follows:[82]

> Theories of harm are drawn up by the Authorities to provide the framework for assessing the effects of a merger and whether or not it could lead to an SLC. They describe possible changes arising from the merger, any impact on rivalry and expected harm to customers as compared with the situation likely to arise without the merger ….

6.2 In our issues statement, we identified four TOH, namely:

(a) 'Unilateral horizontal effects': loss of competition between Tarmac and Lafarge as a result of the proposed JV might enable the JV entity to increase prices, worsen quality or service levels and/or reduce capacity through plant closures (or mothballing) in one or more of the relevant markets.

(b) 'Coordinated effects': in relation to any one or more of aggregates, asphalt, cement or RMX, the proposed JV might make any pre-existing coordination[83] between the majors more stable or effective, or, in the absence of pre-existing coordination, might create the conditions where such coordination is likely.

---

[82] The Guidelines, paragraph 4.2.1.
[83] Coordinated effects may arise when firms operating in the same market recognize that they are mutually interdependent and that they can reach a more profitable outcome if they coordinate to limit their rivalry. Coordination can be explicit or tacit.

(c) 'Vertical effects arising from unilateral market power': the proposed JV might create or enhance vertical integration in certain local areas, such that the JV entity would have the ability and incentive to engage in partial or full input foreclosure[84] in certain local areas in relation to:

(i) cement sold to RMX-producing customers;

(ii) aggregates sold to RMX-producing customers; and/or

(iii) aggregates sold to asphalt-producing customers.

(d) 'Vertical effects arising from coordination': by making coordination between the majors likely to arise, or by making any such pre-existing coordination more effective, the proposed JV might result in partial or full input foreclosure in certain local areas in relation to:

(i) cement sold to RMX-producing customers;

(ii) aggregates sold to RMX-producing customers; and/or

(iii) aggregates sold to asphalt-producing customers.

6.3 In this section, we set out our analysis of these TOH.

Unilateral effects

Bulk cement

6.4 Given our findings in relation to coordinated effects in the bulk cement market as a result of the proposed JV (see paragraphs 6.258 to 6.264), we did not conclude as to whether the proposed JV would also give rise to unilateral effects in this market.

Bagged cement

6.5 Bulk cement is the key input into the production of bagged cement, and the effect of the proposed JV on competition in the bulk cement market is assessed in paragraphs 6.203 to 6.264. We found that Tarmac had a market share of only about [✂] per cent in bagged cement, and therefore there was no material overlap between Tarmac and Lafarge in this market (see Appendix J). In light of these factors, we reached no conclusion on the effect of the proposed JV in the bagged cement market specifically as we considered that any concerns would be captured by our competitive assessment of the bulk cement market.

Primary aggregates for construction applications

6.6 In our competitive assessment we considered whether there might be unilateral effects as a result of the proposed JV in relation to primary aggregates for construction applications. As explained in paragraphs 5.37 and 5.38, we considered the primary aggregates market and market segmentations into crushed rock, sand and gravel and specific products within these two segments. We also considered the

[84] Full input foreclosure occurs when a supplier refuses to supply an input to customers which use that input to compete with it in downstream markets. Partial input foreclosure occurs when a supplier increases (to a greater extent than otherwise might be expected) the prices of an input to customers which use that input to compete with it in downstream markets. Input foreclosure would thus make it harder for rivals in downstream markets to compete.

possible competitive constraints arising from secondary and recycled aggregates when available in a given geographic area.

6.7 We carried out a local competitive analysis as primary aggregates for construction applications are, on the whole, transported over relatively short distances. In order to determine the relevant distances, we carried out catchment area analysis, which identified the geographic area around production sites within which those sites derived a large percentage of their business. Having established the relevant catchment areas, we then identified in which of these areas Tarmac and Lafarge plants overlapped (ie those areas in which there was both a Tarmac plant and a Lafarge plant) ('overlap areas'). We then used filters to identify in which of these overlap areas there might be competition problems ('possible problem areas'). In using filters, our goal was to capture possible problem areas, so we could focus our detailed competitive assessment on those areas. Our approach to filters was therefore conservative, in that we generally opted for filters (and thresholds for our filters) that would result in fewer rather than more areas being filtered out (see paragraphs 6.20, 6.25 and 6.34).[85] The final step in our unilateral effects assessment in the primary aggregate market was to analyse the competitive dynamics in each of the possible problem areas individually so as to decide in which of them there would be likely to be a competition problem.

6.8 We carried out PCA as one piece of analysis (among others) to inform our view on whether the proposed JV was likely to lead to competition problems.[86] In the PCA, we estimated an econometric model based on market data. We then used the results from the estimated model to form predictions on market outcomes. Predicted outcomes are less reliable at data points which appear less frequently in the sample. Local areas, where, as a consequence of the proposed JV, the number of different competitors within the catchment area would fall from three to two or from two to one, are relatively uncommon in the aggregates data.[87] In such cases, we considered the PCA to be less informative. Therefore, in constructing our filters for the catchment areas analysis, we combined information from the PCA with information on the reduction in the number of competitors ('fascia reduction') (see paragraph 6.24).

PCA

6.9 The aim of the PCA was to determine the extent to which competition from rival sources of supply constrained the pricing of primary aggregates (the same analysis was also carried out for asphalt, bulk cement and RMX). Of particular interest was the extent to which Anglo American (Tarmac) and Lafarge presently constrained each other's pricing. The PCA methodology and results are described in more detail in Appendix H.

6.10 For a number of the primary aggregate products considered in the PCA, Lafarge's plants have a negative effect on Tarmac's prices, ie areas with a smaller number of Lafarge plants nearby are statistically associated with higher Tarmac prices (we term this result 'negative effects' in what follows). The presence of other majors' plants nearby is also associated with a negative effect on the main parties' prices: the

---

[85] See paragraph 2.9 of the *Commentary on retail mergers*, March 2011, OFT1305/CC2 com 2. We noted that the *Commentary on retail mergers* specifically related to mergers in retail sectors. However, we also noted that the catchment area methodology discussed in the *Commentary on retail mergers* had been applied in the past by the OFT to non-retail merger cases. Further, in our view, a catchment area methodology was appropriate for our assessment of the proposed JV in respect of possible unilateral effects involving a large number of local areas where the operations of the main parties overlapped. In what follows, we refer to the *Commentary on retail mergers* to the extent that this methodology is relevant to the present case.

[86] As the PCA informed our decision on filters and possible problem areas, we discuss the PCA first.

[87] In the sample there is a small proportion of catchment areas that would, as a result of the proposed JV, experience a fascia reduction from two to one and from three to two.

effects are typically much weaker for Lafarge prices than for Tarmac prices. These negative effects are consistent with these companies constraining Tarmac's prices for some primary aggregates products. The negative effects were not observed for all primary aggregate products considered and there were a small number of counter-intuitive results, where areas with a smaller number of competitor plants nearby were associated with lower prices. For the two Tarmac sand and gravel products we considered, any negative effects from Lafarge's plants were small—at most around 0.5 per cent per nearby plant. The negative effects were higher for two high-selling Tarmac crushed rock products—roadstone sub-base and graded (40mm max)—where negative effects on price were respectively 2 to 3 per cent per nearby plant and 1 to 2 per cent per nearby plant (in each case depending on whether or not there is also a Tarmac plant nearby, with the higher effect in each range being where there is a Tarmac plant nearby). The negative effects of Lafarge plants nearby on Tarmac's prices are consistent with a unilateral theory of harm. Since Lafarge's presence nearby currently appears to constrain Tarmac's pricing for a number of the primary aggregates products considered, this analysis suggests that the disappearance of Lafarge as a competitor would be likely to lead to an increase in Tarmac's prices for these products.

Catchment area analysis

6.11 Our catchment area analysis is described in more detail in Appendix I. We used the main parties' 2010 transactions data to calculate catchment areas. The radii of the catchment areas were the distances (in a straight line) within which 80 per cent of sites' external sales volumes were delivered. A figure of 80 per cent has been used in a number of CC and OFT investigations.[88] Weighted average radii were calculated separately for Tarmac's urban and non-urban production sites and for Lafarge's urban and non-urban production sites. Specific radii were calculated for each of the main parties' rail-linked depots. Separate calculations were done for primary aggregates, sand and gravel, crushed rock and all aggregates. We tested the sensitivity of these radii using sales volumes of 70 and 90 per cent. Table 2 shows the radii we calculated for production sites.[89]

TABLE 2 **Radii of catchment areas for aggregate production sites based on 80 per cent of sales, 2010**

miles

	Lafarge		*Tarmac*	
	Urban	*Non-urban*	*Urban*	*Non-urban*
Primary aggregates	[✂]	[✂]	[✂]	[✂]
Crushed rock	[✂]	[✂]	[✂]	[✂]
Sand and gravel	[✂]	[✂]	[✂]	[✂]
All aggregates	[✂]	[✂]	[✂]	[✂]

Source: CC calculations based on data provided by the main parties.

6.12 The main parties told us that different average delivery distances for Lafarge and Tarmac sites did not justify the application of different catchment areas and that we had failed to establish an economic basis upon which to apply different average radials for Lafarge and Tarmac sites. They argued that delivery distances were likely to be affected by 'network density effects', ie where a supplier had several sites in a given area, there was greater scope to supply the customer from the nearest site, hence a firm with a denser site network would tend to deliver within shorter distances

[88] See the *Commentary on retail mergers*.
[89] The information in relation to the radii we calculated for rail-linked depots is detailed and has therefore been included in Appendix I.

than a firm with a less dense network. The main parties said that this did not mean that rival competitors with a less dense network and production sites located further away from certain customers could not exert a competitive constraint on suppliers located closer to those customers.

6.13 The main parties made a similar point in relation to using different distances for urban and non-urban areas. They said that smaller distances for urban sites were likely to reflect the fact that these sites were located close to a source of demand as opposed to some intrinsic difficulty in competing over greater distances. For instance, the source of demand was often in urban areas and so sites located in urban areas naturally had lower delivery distances. They said that the fact that a site based in an urban area typically had a delivery distance below that of a site based in a non-urban area did not mean that the urban site could not compete over the same distance as a non-urban site, and neither did it imply that a non-urban site would not constrain the urban site.[90]

6.14 The main parties lastly argued that our analysis did not take into account the scope of the 'true' relevant geographic market of the 'possible problem areas' filtered by the catchment methodology. In particular, they said that, in determining the relevant geographic scope, the CC had not taken into account the economically viable delivery distances of the products and how they were affected by transport costs, nor had the CC assessed how the geographic scope would be affected by a small but significant non-transitory increase in prices, as envisaged in the hypothetical monopolist test (HMT).[91] The main parties indicated that the economically viable delivery distance for aggregates was typically at least around 30 miles.

6.15 We decided to use different radii for Lafarge and Tarmac, and for their urban and non-urban sites, for the reasons set out in the following paragraphs.[92]

6.16 First, in relation to the network density point raised by the main parties, we noted that:

(a) The main parties had not provided any empirical evidence to support their arguments on network density effects and their potential impact on Tarmac's and Lafarge's delivery distances.

(b) Lafarge had fewer sites than Tarmac across the country and these did not appear to be concentrated in specific local areas. If there were network density effects, we would therefore expect to observe greater average radii for Lafarge catchment areas than for Tarmac. However, Table 2 shows that, [✂].

6.17 Secondly, we considered that averages can hide differences between suppliers and areas. There might be a number of reasons explaining why different sites or suppliers had different catchment area radii (eg more efficient plants might be able to compete over longer distances, or suppliers with a more dense network of sites might need to transport over shorter distances). The evidence which formed the basis of the catchment area calculation comprised the main parties' volume data by site and

---

[90] Similarly, the main parties noted that the fact that products distributed from rail-linked depots were transported over shorter distances did not justify the use of narrower individual radials for each depot. They said that, in general, although depots were located closer to the demand locations (thus leading to shorter distances), they competed for customers with quarries that were located further afield.

[91] The Guidelines, paragraph 5.2.8, states 'The Authorities use the 'hypothetical monopolist test' as a tool to check that the relevant product market is not defined too narrowly'. The HMT is satisfied if a monopoly supplier of the products or services in question would be able profitably to raise prices to some customers by at least 5 per cent.

[92] For similar reasons, we computed individual radii for each rail-linked depot, as products distributed from depots are likely to be transported over shorter distances than products sold from a quarry due to the additional transport costs they incur (ie the transport cost from the originating quarry to the depot).

customer location data which showed that the catchment areas for Lafarge and Tarmac were, to some extent, different. In particular, the data showed that for most aggregate products, differences in radii between Lafarge and Tarmac in urban areas were not insignificant (ie primary aggregates, sand and gravel and all aggregates, as shown in Table 2) and that the associated confidence intervals[93] for Lafarge and Tarmac did not overlap (see Appendix I, Table 1). This suggested that that there was a difference between the two suppliers for all their sites and that it could have been misleading to combine the averages of Lafarge and Tarmac. On the other hand, we acknowledged that, when the difference in Tarmac's and Lafarge's radii was very small (eg primary aggregates non-urban sites, crushed rock urban sites, sand and gravel non-urban sites, all aggregates non-urban sites, as shown in Table 2), using an average radius rather than two different radii would not have had a substantial impact on the results.

6.18 Thirdly, in relation to urban and non-urban areas, we considered that there were reasons to expect competition to take place over a shorter distance in urban areas due to slower travel speeds as a result of congestion. This could have an impact on costs for low-value products such as aggregates.[94]

6.19 Therefore, in our view, the radii within which a large proportion of sites' external sales volumes were delivered was a reasonable representation of the strength of competition exerted by, in this case, Tarmac and Lafarge in certain geographic areas. To use an overall average, where we knew that there were differences in the respective radii, could produce misleading results when analysing the strength of the competition in and around these areas.

6.20 As explained in paragraph 6.7, we used catchment areas to identify where there were overlaps between the production sites of the main parties (and, as a second step, to apply filters, see paragraph 6.21). We did not undertake a further assessment of the geographic scope of the markets. We were aware that, as set out in the Guidelines, the geographic market identified using the HMT would typically be wider than a catchment area. However, as noted in the Guidelines and in the *Commentary on retail mergers*, the catchment area approach was designed to be used as a basis to exclude local areas from further analysis and, as such, a cautious approach was justified.[95]

6.21 We then considered filters which would identify overlap areas possibly giving rise to competition problems ('possible problem areas'). The methodology used for the construction of filters is aimed at reflecting the results of our PCA. It combines two approaches, which in turn use different filters. We decided to use filters based on the PCA results, rather than on market share thresholds, as they were based on empirical relationships we had identified between price and concentration.

6.22 We used different filters for the two crushed rock products (roadstone sub-base and graded 40mm max) where the PCA had found a negative price effect of about 1 per cent or more per nearby plant and for the products where it had found a price effect of less than 0.5 per cent per nearby plant or no price effect.

6.23 For the two Tarmac crushed rock products with price effects of 1 per cent or more per nearby plant, we identified as possible problem plants Tarmac and Lafarge plants

---

[93] A 95 per cent confidence interval is a range of values for a variable of interest that, if the sample were taken 100 times, in 95 cases the true estimate of the variable would lie within this range. The upper and lower levels are called the confidence limits.
[94] This could have an impact in other ways for asphalt and RMX as these products are perishable.
[95] See the Guidelines, paragraph 5.2.25 and the *Commentary on retail mergers*, paragraphs 2.4, 2.7, 2.9 and 2.13 & 2.14.

which were within 22.5-mile radii of customer locations where the customer had purchased roadstone sub-base (or graded 40mm max) in 2010, there was at least one Tarmac plant producing roadstone sub-base (or graded 40mm max) within the radius and there was at least one Lafarge plant that produced crushed rock within the radius. We then considered as possible problem areas the areas centred on each of these Tarmac and Lafarge plants where there was an overlap between the main parties in crushed rock. This filter is referred to as 'PCA' filter in what follows.

6.24 For the products with a price effect of less than 0.5 per cent per nearby plant or no price effect, we identified possible problem areas, based on plant-centred catchment areas for primary aggregates and the crushed rock and sand and gravel segments, where there was a fascia reduction from two to one or from three to two or from four to three (where the fourth competitor's share of production volume was lower than 5 per cent). We selected these changes in fascia count to take into account the possibility that the PCA would not capture the price effects resulting from a step change in competition, from two suppliers to one. We also noted that the PCA predictions might not be accurate for areas with fascia reduction from two to one or from three to two, since these areas are not typical in the data (see paragraph 6.8). This filter is referred to as the 'fascia reduction' filter in what follows.

6.25 As noted in paragraph 6.7, at this stage of the analysis, we applied what we considered to be conservative filters to identify possible problem sites. In particular, in relation to the fascia reduction filter, we considered the number of fascia in the primary aggregate market as well as in the crushed rock and sand and gravel segments. In relation to the PCA filter, we focused on the two Tarmac crushed rock products for which the PCA results showed negative price effects of about 1 per cent or more per nearby plant. We noted that, in the selection of filters, a cautious approach was further justified, as the extent of substitutability between crushed rock and sand and gravel (and specific products in these segments) appeared to depend on the application and we did not have information about the customer base by application in specific local areas.

6.26 These filters produced 43 possible problem areas in primary aggregates, of which four were identified by the fascia reduction filter and 39 by the PCA filter.[96] Of these areas, five were centred on rail-linked depots. All these problem areas are shown in Appendix I.

Competition dynamics in the possible problem areas

6.27 In our assessments we took account of the views of the main parties, the location of the plants and depots of the main and third parties, the location of the customer sites of the main parties and the shares of production held by the main and third parties in each local area. Shares of production were considered in relation to the primary aggregates market as well as in relation to the crushed rock and sand and gravel segments and the wider aggregates product group, which also includes secondary and recycled aggregates. We considered all these factors in combination in order to reach a conclusion on whether or not there was a competition problem in any given area.

6.28 We sent the main parties a list of the possible problem areas (and sites) and asked for their views. We constructed maps of the local areas showing the locations and types of the plants of the main and third parties and the location and size of customer sites of the main parties. We sent these to the main parties. The main parties made a

[96] The area centred on Swansea Wharf was selected by both filters.

number of general points on the possible problem areas, all of which we considered in our local assessment (see Appendix I). According to the main parties:

(a) In looking at volumes, we should focus on external and not internal volumes as internal volumes had a limited impact on competition for supply to third parties.

(b) Where appropriate, we should take into account the importance of demand outside the catchment area. Even though some plants were located in the same catchment area, the locations of these plants might mean that they competed for different customer sites due the location of the sites relative to the major conurbations.

(c) Where appropriate, we should consider competitive constraints exerted by competitors of the JV entity that were located outside the radials, in particular where those competing sites outside the radial were well placed to serve a demand centre that would be the main source of customers for one of the parties' sites located within the radial in question.

(d) Where appropriate, we should consider any relevant topographical features in the local competitive assessment, for example instances where different sites located in the same radials were effectively serving different markets due to the presence of a river or an estuary.

(e) Where appropriate, we should consider the fact that some sites were mothballed which might result in little effective overlap in certain local areas.

(f) Remaining companies, many of which had substantial excess capacity, would continue to constrain the JV entity.[97]

(g) Secondary and recycled aggregates would continue to constrain the JV entity, in particular for the supply of roadstone sub-base material to general construction, since this was the end-use for which the major part of recycled aggregate was used. Recycled aggregates would continue to be a significant source of competition especially in areas close to the major conurbations, where recycled aggregates were often produced in close proximity to customer locations (thereby enjoying an additional cost advantage over primary aggregates delivered from quarries located at greater distances). When recycled and secondary aggregates producers were taken into account, the JV entity's shares of production would be generally (and sometimes very significantly) lower in most radials. Moreover there would be a large number of competing suppliers to the JV entity in every local market.

(h) The selling process was highly competitive with jobs and prices invariably determined via negotiation or tender (whether formal or otherwise) and suppliers in construction material markets faced large and experienced buyers that established customer-specific terms and were accustomed to multi-sourcing and shopping around for the best terms of supply. The main parties further considered that these types of customers had sophisticated procurement teams that obtained competitive terms of supply through effective negotiation or via competitive tenders.

[97] The main parties provided estimates of the third party excess capacity (relative to the JV entity's production volumes) in each of the problem areas identified in the provisional findings. The main parties estimated that spare capacity held by third parties represented on average over 40 per cent of the JV entity's volume in 2010 across all problem areas identified by the CC.

6.29 For these reasons, the main parties expressed the view that we had adopted an unjustifiably conservative approach by applying a 33 per cent screen on a primary-aggregates-only basis and by segmenting between sand and gravel and crushed rock in concluding on SLCs in the problem areas identified (see paragraph 6.34).

6.30 We considered the main parties' views as set out in paragraph 6.28 and noted the following:

(a) We did not agree that we should focus on external volumes as the parties have the ability to switch between internal and external volumes.

(b) We took account of locations of customer sites in our local assessment.

(c) We took account of locations of plants in our local assessment.

(d) We took account of topographical features in our local assessment and, in one case, as part of our decision not to consider an area in the local assessment.[98]

(e) We considered mothballed plants. We include those that produced output in 2010 as they could be reopened in the short term.

(f) We took account of constraints from competitors' plants in calculating our shares of production. In relation to competitors' excess capacity, our response is set out in paragraphs 6.278 to 6.270.

(g) We took account of constraints from secondary and recycled aggregates in calculating shares of production. We note, however, that the evidence provided to us by the main parties on the extent of the constraints that secondary and recycled aggregates imposed on primary aggregates in specific local areas tended to be limited to whether such types of aggregate were available in certain local areas and not on the extent to which they constrained primary aggregates.[99] For this reason, we attached more weight to the constraints between primary aggregates.

(h) We noted that the fascia reduction filter was designed to capture situations where competition would be limited following the proposed JV and that the PCA filter was based on price effects found on average given the current competitive environment.

6.31 We used production shares as opposed to market shares as we had more comprehensive and comparable data for the former.[100] A possible disadvantage with using production shares is that production in a local area may not be sold in the same local area.[101] On the other hand, production shares could be seen as indicating the potential strength of a firm in a local area as its production may show its ability and potential to compete for sales in this local area.

6.32 The Guidelines note that when products are undifferentiated, unilateral effects are more likely where: the market is concentrated; there are few firms in the affected market post-merger; the merger results in a firm with a large market share; and there

---

[98] The area centred on Dumbarton Concrete was not found to be a problem because the two relevant plants in the area did not compete as they were separated by the Clyde Estuary.
[99] Such evidence could include primary aggregates being replaced by secondary and/or recycled aggregates or prices of primary aggregates responding to sales being lost or potentially lost to secondary and/or recycled aggregates.
[100] For rail-linked depots, we used shares of total sales.
[101] Market shares are shares of sales in the market. The data available did not allow us to distinguish, for both the main parties and competitors, between sales from a specific plant which remained in the local area and sales into a different area.

is no strong competitive fringe of firms.[102] The Guidelines further note that market shares of firms in the market, both in absolute terms and relative to each other, can give an indication of the potential extent of a firm's market power. The combined market shares of the merger firms, when compared with their respective pre-merger market shares, can provide an indication of the change in market power resulting from a merger. In horizontal mergers in markets involving undifferentiated products, unilateral effects are more likely where the merger results in a firm with a large market share.[103] The Guidelines explain that previous OFT decisions in mergers in markets where products are undifferentiated suggest that combined market shares of less than 40 per cent will not often give the OFT cause for concern over unilateral effects.[104] However, to the extent that the OFT uses and relies on market shares, the Guidelines note that it will normally not have regard to market share and concentration thresholds on anything other than the narrowest market that satisfies the HMT.[105] The Guidelines also note that, when interpreting information on market shares, factors such as product differentiation and how widely the market is defined, may be taken into account.[106]

6.33 In its assessment, the OFT used a market share threshold approach to identify local overlap areas where there was no realistic prospect of competition concerns arising. We examined the approach taken by the OFT to market share thresholds in detail.[107] The share threshold used was 33 per cent for aggregates.[108] The OFT considered a threshold level lower than the 40 per cent referred to in the Guidelines to be appropriate for aggregates for the following reasons: *(a)* differing levels of closeness of competition may exist between suppliers located in different positions within a given radial, thereby meaning that suppliers are geographically differentiated; *(b)* transport costs indicate a significant cost differential between differently located production sites; and *(c)* the parties' gross margins in the supply of aggregates are high.[109] The OFT noted that catchment areas were likely to be no wider than the narrowest market satisfying the HMT.[110]

6.34 For the reasons set out in paragraph 6.21, we adopted an approach to the construction of filters and the identification of possible problem areas that was not based on market share thresholds. However, as explained in paragraph 6.27, we considered shares of production, together with other evidence, in our more detailed local assessment. As part of this assessment, we decided not to pursue possible problem areas with combined shares of production in primary aggregates of less than 33 per cent. In particular, on the basis of the discussion in paragraphs 6.32 and 6.33, we noted that catchment areas were likely to be no wider than the narrowest market satisfying the HMT, but we considered that a 33 per cent threshold was justified by the degree of product and geographic differentiation in the primary aggregates market (ie by type of primary aggregate—crushed rock and sand and gravel—and by the supplier's geographic location). As explained in paragraphs 6.27 and 6.30(g), in our assessment of the areas remaining after the 33 per cent threshold was applied, shares of production of primary aggregates were considered in combination with shares of production of crushed rock and sand and gravel and shares of production

---

[102] The Guidelines, paragraph 5.4.4.
[103] The Guidelines, paragraph 5.3.4.
[104] The Guidelines, paragraph 5.3.5.
[105] The Guidelines, paragraph 5.3.5.
[106] The Guidelines, paragraph 5.3.2.
[107] The OFT's approach is set out in its decision to refer the joint venture to the CC (the Reference Decision) 'Proposed joint venture between Anglo American Plc and Lafarge S.A: Decision under section 33 of the Enterprise Act 2002, 2 September 2011', www.oft.gov.uk/shared_oft/mergers_ea02/2011/anglo-american-lafarge.pdf.
[108] The threshold used was 40 per cent for both asphalt and RMX—see the Reference Decision, paragraphs 151, 171 & 200.
[109] The Reference Decision, paragraph 7.
[110] The Reference Decision paragraph 138.

of 'all aggregates' ie primary, secondary and recycled aggregates. We attached more weight to shares of production in the primary aggregates market.

6.35 In summary, our assessment of the 43 possible problem areas in primary aggregates identified by the filters (see paragraph 6.26) first resulted in 15 areas being excluded from further analysis.[111] Of the remaining 28 possible problem areas, nine areas were dropped from the analysis as a result of the 33 per cent threshold, and are not discussed in our local assessment. Taking account of all the factors set out in paragraph 6.27 and 6.30, we found a competition problem in the remaining 19 areas, of which 16 areas are centred on production sites and three are centred on rail-linked depots. These areas are discussed and listed in Appendix I. We found that the proposed JV would be likely to result in an SLC in each of these markets.

Rail ballast

Market conditions

6.36 Network Rail buys around 99 per cent of the rail ballast produced in the UK. Network Rail told us that it had purchased approximately 2–2.5 million tonnes of rail ballast a year over the last five years, corresponding to a total spend of approximately £20 million a year (out of a spending for track renewal of £700–£800 million a year).

6.37 There are only a few suppliers of rail ballast and relatively few shipping points (ie quarries or depots) in the UK. The main suppliers are Lafarge; Midland Quarry Products (MQP), a [✂] JV between Tarmac and Hanson; Aggregate Industries; and Cemex. Lafarge has one quarry producing rail ballast (Mountsorrel),[112] which is rail-linked. Tarmac is active in the production of rail ballast almost solely through MQP, from MQP's Cliffe Hill quarry.[113] Tarmac also produces small quantities of rail ballast from Tarmac's Minffordd, Barrasford and Park quarries. The MQP site at Cliffe Hill is rail-linked, but Minffordd, Barrasford and Park are not.[114] Hanson is currently only active in rail ballast through MQP. Aggregates Industries has three quarries (Bardon Hill, Meldon[115] and Glensanda) and one depot (Isle of Grain) which receives rail ballast shipped by sea from the Glensanda quarry. Cemex has one quarry (Shap Blue) and one depot (Salford). The rail ballast production sites and depots of Lafarge, MQP, Tarmac, Aggregate Industries and Cemex are shown in Appendix J, Figure 1.

6.38 Network Rail told us that it contracted with its suppliers using five-year nil value frameworks[116] and accordingly the volumes taken from each supplier could vary depending on Network Rail's requirements. Network Rail told us that the current shares of supply (by volume) to Network Rail of rail ballast (for a 12-month period) were: Lafarge ([✂] per cent); MQP ([✂] per cent); Aggregate Industries ([✂] per

---

[111] Out of 39 possible problem areas identified by the PCA filter, 15 were dropped for the following reasons: *(a)* five Tarmac sites identified were reselling roadstone sub-base (or graded 40mm) rather than producing it; *(b)* nine areas identified had Lafarge sites in the catchment area producing very low volumes of primary aggregates so that the associated increment in the share of production due to Lafarge was up to around [✂] per cent (and, therefore, there was no material overlap in primary aggregates between Tarmac and Lafarge in those areas); and *(c)* one Tarmac site had no Lafarge site present in its catchment area for primary aggregates (and, therefore, there was no overlap in primary aggregates), even though a Lafarge site was present in the wider radial for crushed rock with very low production volumes. These sites, and the associated site-centred catchment areas, have not been considered further in the local competitive assessment (see Appendix I).
[112] Rail ballast from Mountsorrel is also resold through other Lafarge quarries. Lafarge told us that it did not have any depots which supplied rail ballast on a regular basis, although any Lafarge depot could in theory handle ballast should the need arise.
[113] In our assessment of competitive effects in rail ballast, we attribute 100 per cent of the MQP rail ballast volumes to Tarmac, since MQP is a [✂] JV between Tarmac and Hanson, and we have no evidence that Hanson operates as an independent competitive constraint in the market separately from Tarmac.
[114] According to figures from Tarmac, [✂]. Park Quarry is not shown on the map in Appendix J due to the volumes produced being negligible.
[115] Meldon has been mothballed since 2011.
[116] These are contracts which do not specify a volume requirement for the customer.

cent); Cemex ([✂] per cent); and others ([✂] per cent). Over the last ten years supply to Network Rail has become more concentrated on a smaller number of sources.

Geographic constraints

6.39 We considered that, in order to assess the competitive effects of the proposed JV in the rail ballast market, it was appropriate to define the geographic market as being national in scope because Network Rail buys rail ballast nationally through tender processes and all main suppliers compete in these tenders.

6.40 However, Network Rail told us that, in selecting the winning bidders in these tender processes and the corresponding volumes of supply, the specific geographic location of the quarries mattered, as it had an impact on the 'delivered' price Network Rail had to pay.[117] Network Rail told us that in most cases the difference between competing bids reflected differences in transport costs from the different points of production to the point or area of use.[118] This evidence suggested to us that, in assessing the competitive effects of the proposed JV in the rail ballast market, there was a geographic dimension of competition which we needed to take into account.

Competitive effects

- *Main parties' views*

6.41 In the main parties' view, Cemex, Hanson, Aggregates Industries and Stema[119] were all credible suppliers of rail ballast. Lafarge told us that it recognized that there were a limited number of suppliers of high-quality rail ballast. It believed there was going to be more reuse of rail ballast in future for further use as rail ballast (rather than, as currently, the recycling of used rail ballast in other applications). Anglo American told us that Network Rail had buyer power (and referred to evidence provided by Network Rail that it had managed to negotiate away higher initial bid prices in the last tender process—see paragraph 6.44—as demonstrating this point) and that rail ballast could also be imported. Furthermore, Anglo American submitted that rail ballast could be loaded on to the rail network for delivery.

- *Network Rail's view*

6.42 Network Rail told us that Lafarge and MQP were very close competitors, both owning large quarries in Leicestershire[120] which had stone reserves which met Network Rail's rail ballast specification. Network Rail was concerned about the potential consequences of the merging of two specific rail-connected quarries supplying about [✂] per cent of its rail ballast requirements: Lafarge's Mountsorrel quarry and MQP's Cliffe Hill quarry.

---

[117] Network Rail told us that the analysis of the competing bids was done on a geographical basis and that Network Rail decided how much volume it wanted to buy from each supplier, depending on the forecast of its requirements by geographic area.
[118] By way of example, Network Rail noted that the price quoted by [✂] for a supply via [✂] into the South of England was [✂] than the price [✂] quoted for a supply from its quarry [✂], while the two quarries were considered to be equally efficient.
[119] Stema is an importer of primary aggregates from Norway into the UK. Stema Shipping (UK) Ltd is effectively a 50:50 JV between Heidelberger Sand und Kies Gmbh and Mr Hans Jürgen Hartmann, which each own 50 per cent of Mibau Holding. Stema Shipping A/S is a 100 per cent subsidiary of Mibau Holding (and in turn Stema Shipping UK is wholly owned by Stema Shipping A/S).
[120] Aggregate Industries also has a quarry in Leicestershire.

6.43 Network Rail concluded a competitive tender process in 2011 for the following five-year period and provided us with details of the tender. Details of the bids received (including pricing), the tender assessment criteria and the outcome of the tender process are set out in Appendix J.

6.44 Network Rail told us that the initial bid prices in the last tender process in 2011 were higher than in the previous one in 2006, but that it managed to eliminate the gap through post-tender negotiation.

6.45 Network Rail told us that its demand for rail ballast was price inelastic (ie volumes were unlikely to decrease in response to a price increase), as the track renewal programme was driven by the asset condition, and by safety and performance considerations. [✂]

6.46 In relation to imports, Network Rail told us that [✂] submitted a bid during Network Rail's most recent tender process. However, the bid submitted by [✂] was [✂] of the best price offered, and Network Rail believed that this was due to the transport costs to import the product. More generally, Network Rail told us that it had never contracted an importer in the past because this, while possible, had never proven to be financially viable.

6.47 In relation to entry, Network Rail explained to us that there were two criteria that a new entrant would have to meet in order to supply rail ballast to it:

(a) having 'Link-up'[121] approval; and

(b) product acceptance by Network Rail. This involved Network Rail trialling the product to ensure that it met the required performance standards, before a certificate of acceptance was issued. The process took between 6 and 12 months.

- *Third party views*

6.48 We contacted a number of small rail ballast customers. One of these indicated that the ability of a supplier to deliver to all its sites was very important in its choice of supplier.[122] Two of these customers told us that it was difficult to get competing quotes for rail ballast. One explained that this was because there were not enough alternative suppliers in certain geographic locations,[123] whilst the other said that there were not enough alternative suppliers due to the limited number of quarries producing ballast to Network Rail standards.[124]

6.49 We also contacted Stema to understand better the constraints possibly exerted by imports of primary aggregates, and in particular of rail ballast. Stema told us that, while it won tenders for bagged products, it could not bid for bulk supply of rail ballast to Network Rail because Stema did not have rail-connected wharves. Stema also indicated that its import of rail ballast had decreased in the past five years due to the completion of contracts in Kent and the lack of rail links to its terminals. Finally, Stema estimated the transport costs from Norway into the UK at [£4–£5] per tonne.

[121] Link-up is the UK rail industry supplier qualification scheme.
[122] Skanska.
[123] Balfour Beatty.
[124] Story Rail.

- *Our assessment*

6.50 We noted from Network Rail's evidence that its demand for rail ballast was fairly price inelastic. In particular, Network Rail told us that rail ballast had a very high specification (ie substitutes were not available) and it was a safety critical component of the rail network. It therefore must be renewed as and when required.

6.51 We considered whether, given Network Rail's position as the buyer of almost all the rail ballast sold in the UK, countervailing buyer power might offset any SLC that would otherwise arise in the rail ballast market.

6.52 The existence of a large buyer is not sufficient to confer countervailing buyer power if this buyer is dependent on particular suppliers in the market. For there to be countervailing buyer power in the rail ballast market, Network Rail would need to be able credibly to threaten to switch suppliers.

6.53 In particular, one way in which Network Rail's position as the buyer of almost all the rail ballast sold in the UK could confer some 'buyer power' is if this made the process for supplying rail ballast very competitive. In the presence of a unique buyer, if each supplier has sufficient capacity to supply all the demand, and if none of the suppliers has a material cost advantage over the others, the fact that suppliers are dependent on a unique buyer could make the tendering process very competitive even if there are only a limited number of bidders. This could be the case if Aggregate Industries and/or Cemex had sufficient capacity to supply Network Rail's requirements for rail ballast and at similar costs to Tarmac and Lafarge, and if Aggregate Industries and/or Cemex had strong incentives to sell their rail ballast (eg high fixed costs which would be incurred even if they only supplied a small amount of rail ballast).

6.54 However, we considered that this was unlikely to be the case. While capacity constraints do not appear to exist, given the importance of transport costs in the supply of rail ballast (alongside the ex-works price and ability to meet the specification), different suppliers enjoy cost advantages in different geographic areas. Network Rail confirmed that no single supplier could meet all its needs and that its tender process resulted in a number of suppliers being selected (for different volumes) depending on which supply was most cost-effective in each geographic area. Therefore, we considered it unlikely that other existing competitors would be able credibly to supply Network Rail's requirements at a price similar to the current one across different geographic areas.

6.55 We considered it unlikely that Network Rail would sponsor entry. Further, given the importance of transport costs in the supply of rail ballast, it appeared unlikely that increasing imports into the UK would be sufficient to prevent the JV entity exercising any market power.[125]

- *Conclusions on rail ballast*

6.56 Taking all the evidence together, we found that:

(a) The proposed JV would bring together the largest supplier of rail ballast (Lafarge with [✂] per cent share of supply) and the second largest supplier (Tarmac,

[125] In light of evidence on bid prices, the fact that rail ballast is supplied by sea to the South of England from a quarry in Scotland (see paragraph 6.37) does not establish that (as argued by Lafarge) imports of rail ballast could be equally competitive.

through MQP, with [✂] per cent share of supply). After the proposed JV there would be no other remaining suppliers of rail ballast with a significant share.

(b) It was unlikely that the remaining competitors would have the ability to constrain the JV entity's pricing, due to the effect of the locations of their quarries on the cost to supply rail ballast into certain geographic areas and, therefore, on the price the remaining competitors would charge to Network Rail in those areas.

(c) Network Rail's position as the purchaser of almost all the rail ballast sold in the UK had not given it countervailing buyer power.

(d) It was unlikely that entry or imports could constrain the JV entity's pricing.

6.57 We therefore concluded that the proposed JV would be likely to result in an SLC in the supply of rail ballast.

High purity limestone

6.58 We considered the potential for unilateral effects in the HPL market. In our analysis we examined whether the competitive constraints for HPL used for FGD were different from those for HPL used for other applications, for the reasons set out in paragraph 5.42.

Market conditions

6.59 Anglo American told us that no British or European Standards applied in most HPL applications. Instead, customers had a desired chemical specification which they required the limestone to meet. Typically this meant that customers would not only seek a calcium carbonate content of above 95 per cent, but they would have specific limits on trace elements that made up the balance of the limestone supplied. Anglo American also told us that, in relation to HPL for FGD, the main requirement of customers was for consistency in terms of the chemical composition of the product supplied, given that different trace elements reacted differently with sulphur during the desulphurization process and this affected the gypsum produced. Lafarge also recognized that power stations wanted a consistent quality of HPL for FGD.

6.60 The main industrial applications in which HPL is used include limestone powders, soda ash manufacture, FGD, production of precipitated calcium carbonate, iron production and sugar refining.

6.61 Purchasers of HPL are (among others) producers of steel, glass, paper products and animal feed, as well as generators of electricity at coal-fired power stations[126].

6.62 Evidence submitted by the main parties and third parties suggested that there were several suppliers of HPL for industrial uses. Anglo American told us that there were reserves of HPL in the Peak District, the Mendips, South and North Wales, parts of the northern Pennines and around the fringes of the Lake District. Appendix J, Table 4, shows the market shares estimated by Anglo American for HPL in Great Britain in 2010. Appendix J, Figure 2, shows the locations of production sites of HPL for Lafarge and Tarmac.

6.63 However, the current sources of supply of HPL for FGD appear much more limited, with Tarmac and Lafarge being the only two current suppliers. Anglo American

[126] The main parties noted that only power stations fitted with flue gas scrubbing equipment required HPL for FGD.

estimated that it supplied approximately [✂] per cent of HPL for FGD in 2010 with Lafarge supplying the remainder. The total volume of sales of HPL for FGD in 2010 was about [✂]Mt with a total value of about £[✂]. There are eight customers [✂] for HPL for FGD. [✂][127,128]

6.64 Cemex confirmed that [✂] HPL for FGD but had bid for [✂] contracts in the past. Cemex believed that it could potentially supply HPL for FGD from any one of its Dove Holes, Raynes or Halkyn quarries. Dove Holes is rail-linked. Hanson confirmed that it had not supplied HPL for FGD uses in the past, but supplied HPL for other uses. Hanson told us that it could potentially supply HPL for FGD purposes out of any one of its Batts Combe, Shap, Horton and Pateley Bridge quarries. Shap is rail-linked.

6.65 Appendix J, Figure 3, shows the location of the production sites of HPL for FGD for Lafarge and Tarmac, together with the location of their customers. The locations of Cemex's Dove Holes site and Hanson's Shap site are also shown in the figure. [✂] Cemex's Dove Holes site is in the same location in Buxton.[129]

6.66 Appendix J, Table 5, shows the volumes and value of sales of HPL for FGD, for Tarmac and Lafarge, by customer in 2010. As supply to FGD customers is based on competitive tendering and long-term contracts, we considered that actual volumes sold only partly reflected competition in the market, and that suppliers' bidding behaviour in tenders would be a key consideration. For this reason, we looked at historic data on the identity of bidders in tender processes as well as customers' current views on potential suppliers (see paragraphs 6.75 to 6.77).

Geographic constraints

6.67 There is evidence that HPL is transported over greater distances than construction aggregates. Based on 2010 transaction data provided by the main parties, 80 per cent of Tarmac HPL external sales (by volume) are delivered within a distance of [✂] miles from the production site.[130] The average delivered distance for Lafarge is [✂] miles.[131]

6.68 HPL used for FGD applications is always delivered by rail to power stations. For Tarmac, the average delivered distance for FGD customers is [✂] miles. For Lafarge, the average delivered distance is [✂] miles.

Competitive effects for non-FGD applications

6.69 We received few submissions from non-FGD customers of HPL. None of the customers who replied to our questionnaire raised concerns regarding the proposed JV.

6.70 On the basis of the evidence in paragraphs 6.59 to 6.69, we concluded that the proposed JV would be unlikely to result in an SLC in the supply of HPL for non-FGD customers, as there appeared to be sufficient alternative suppliers.

---

[127] [✂]
[128] HPL for FGD is supplied by Lafarge to SSE its Ferrybridge power station. However, the direct customer for the purposes of these sales is not SSE but Lafarge Plasterboard Limited (LPL) which is no longer part of the Lafarge Group. LPL operates a gypsum wallboard plant at Ferrybridge which uses the gypsum produced in the FGD process.
[129] Eggborough Power told us that Lafarge, Tarmac and Cemex quarried the product from the same seam in Derbyshire.
[130] Average distances from catchment area analysis covering 70 or 90 per cent of external delivered volumes are [✂] miles and [✂] miles respectively.
[131] [✂]

Competitive effects for FGD application

- *Main party views*

6.71 The main parties argued that there would be no SLC in relation to the supply of HPL for FGD because:

(a) there were only eight customer contracts and these were long term, [✂];

(b) contracts were subject to competitive tender;

(c) [✂];

(d) Cemex and Hanson each had the ability to supply the power stations with HPL for FGD and were likely to bid for the next power station supply contracts which come up for renewal. Therefore, at most, the proposed JV would result in a reduction in the number of potential suppliers of HPL for FGD from rail-linked quarries from four to three (with a less significant reduction if non-rail-linked suppliers were taken into account);[132] and

(e) further competition could come from other suppliers of limestone powders, such as Longcliffe, Singleton Birch and Ben Bennett. The main parties, however, noted that these suppliers did not currently supply HPL for FGD, in so far as they were aware.

6.72 In addition, Anglo American told us that power stations could take HPL for FGD at a particular power station from more than one source, although they currently chose not to. Anglo American also argued that imports of HPL for FGD were a constraint in the market, and that there was countervailing buyer power. To the extent that quarries of potential competitors were not rail-linked, Anglo American considered that HPL for FGD could be transported by road from these quarries to rail depots where it could be loaded on to the rail network. The main parties also argued that the source of HPL for FGD did not need to be located close to a power station and that use of rail permitted transport of HPL for FGD over greater distances than by road. The main parties explained that they transported HPL up to [✂] and considered that it would be economic to supply over greater distances as evidenced by Hanson's supply to Tata Steel at Teesside. The main parties noted that the overall size of the market for HPL for FGD was small (estimated at [less than 1,000,000] tonnes in 2010) and that the volumes of HPL for FGD that were supplied from Tunstead and Dowlow were small proportions of the total volumes of aggregates produced at each of these quarries.

- *Third party views—tendering, loss of existing competition and potential suppliers*

6.73 Appendix J, Table 6, presents information on customers' latest tenders. Contracts vary between customers but appear to be between five and ten years in length with some exercising a renewal option.

6.74 The power stations that responded to our questionnaire told us that there were very few suppliers that could supply HPL for FGD uses. The reasons were that the technical specification of HPL for FGD was stringent[133] and that, due to high transport

[132] The main parties told us that Cemex started supplying chemical stone (for FGD) from the Dove Holes quarry in 2006, [✂].
[133] [✂], E.ON, SSE and Eggborough Power.

costs, the production site had to be close to the power station[134] and deliveries had to be made by rail.[135]

6.75 Customers' views as to the identity of the potential suppliers of HPL for FGD varied slightly between customers. Tarmac and Lafarge were always mentioned, along with a small number of other possibilities (see Appendix J, Table 7).

6.76 Customers considered potential competition from limestone powder producers (such as Longcliffe, Singleton Birch and Ben Bennett) to be limited due to their lack of rail-linked quarries (Singleton Birch) and customers' inability to use their products without substantial expenditure to change customers' existing FGD plants. Third parties also considered imports unlikely to be viable (see Appendix J).

6.77 Apart from the proposed JV, customers did not think the competitive landscape had changed since they had last tendered and/or negotiated for their contracts and did not expect any change in terms of potential suppliers available to them in the next few years.[136]

6.78 As set out in Appendix J, a number of customers who responded to our questionnaire expressed concerns about what they saw as the detrimental effect on competition of the removal of a competitor for supply of HPL for FGD, given the small number of existing competitors.

- *Third party views—demand for HPL for FGD and negotiating power*

6.79 Customers told us that demand for HPL for FGD uses was price inelastic (ie volumes consumed would not vary much if the price changed by a small but material amount) as FGD was required to ensure compliance with environmental regulations regarding sulphur dioxide emissions. However, the volume consumed does depend on the amount of power being generated and the sulphur content of the different coals used.

6.80 As illustrated in Appendix J, Table 6 customers appear to source from a single supplier for each individual power station.

6.81 We did not receive any specific views on countervailing buyer power from third parties. However, there was evidence that the small number of alternative suppliers of HPL for FGD meant that customers considered that they had difficulty finding alternative suppliers that could supply the volume they needed at a competitive overall price (see Appendix J).

- *Conclusions on HPL for FGD*

6.82 On the basis of the evidence set out in paragraphs 6.59 to 6.81, we found that:

(a) Suppliers of HPL for FGD had to meet the technical specification for this application.

(b) Lafarge and Tarmac, the only two current suppliers of HPL for FGD, had rail-linked quarries located sufficiently close to the coal-fired power stations to allow

[134] E.ON.
[135] [✂]
[136] [✂], E.ON, Rugeley, Eggborough and SSE.

them to supply competitively.[137] Our analysis of the geographic scope of the market (see paragraph 6.68) confirmed that HPL for FGD did not travel long distances.

(c) Cemex unsuccessfully tendered for [✂] HPL contracts for FGD issued in the last few years. Although it did not currently supply any HPL for FGD, it had a rail-linked quarry located sufficiently close to the coal-fired power stations that it might represent a constraint on any contract renewal.[138]

(d) Hanson was not a current supplier of HPL for FGD and had not tendered for HPL contracts for FGD in the past. Hanson told us that it could potentially supply HPL for FGD, although we noted that its rail-linked HPL quarry was not located as close to the coal-fired power stations as those of Lafarge, Tarmac and Cemex. Given this evidence, we considered it unlikely that Hanson would represent a constraint on any contract renewal.

(e) Limestone powder producers did not appear to represent a significant competitive constraint, both as a result of a lack of rail-linked quarries and existing FGD equipment being tailored for the use of specific grades of HPL.

(f) Imports were unlikely to be a relevant competitive constraint due to the higher transport costs involved.

(g) There was no evidence of countervailing buyer power.

6.83 Overall, we found that FGD customers currently had [✂] possible suppliers of HPL for any contract renewal—Tarmac, Lafarge [✂]—and that no other supplier of HPL in Great Britain produced the grade of HPL suitable for customers' existing FGD equipment and/or had a rail-linked quarry sufficiently close to the coal-fired power stations to allow competitive supply. In particular, as set out in paragraph 6.82(d), we considered it unlikely that Hanson would represent a constraint on any contract renewal.[139] The proposed JV would therefore reduce the number of possible suppliers of HPL for FGD for any contract renewal from [✂] to [✂]. We considered that this reduction would be likely to compromise considerably the competitive dynamic in tenders, making it easier for competing bidders to anticipate their competitors' behaviour and take this into account. We therefore concluded that the proposed JV would be likely to result in an SLC in the supply of HPL for FGD customers.

Asphalt

6.84 Our local competitive assessment methodology for asphalt is very similar to the one we used for primary aggregates (see paragraphs 6.7 to 6.34). As such, we only discuss the differences between the methodologies we used for primary aggregates and asphalt and show the results of the methodology used for asphalt. As explained in paragraph 5.45, in our competitive assessment we considered the market for asphalt (produced either by fixed or by mobile plants).

---

[137] We noted that, as Anglo American argued, it might be possible to transport HPL for FGD by road to a rail depot for loading on to the rail network. However, we have not observed this happening in the past and the evidence indicates that being rail-linked is an important factor. [✂]

[138] There are currently eight customers for FGD. Based on the contract information submitted to us, most contracts are ten-year contracts; two out of eight contracts are likely to be out to tender in the next two years (see Appendix J, Table 6).

[139] Even if Hanson were a constraint on any contract renewal, this would not change our view about the competitive effects of the proposed JV on competition for the supply of HPL for FGD.

6.85 The main parties made a number of comments in relation to the methodology we adopted for our local competitive assessment. These comments applied in general to all our local market analysis and we have considered these comments in paragraphs 6.28 and 6.30. The main parties also made a number of points on the possible problem areas we found (see paragraph 6.90), all of which we considered in our local assessment (see Appendix I).

PCA

6.86 For the asphalt products considered, our PCA found fewer instances of negative price effects than it did for primary aggregates and all of these were less than 0.5 per cent per nearby plant. The results were consistent with *(a)* Tarmac being the strongest constraint for one of Lafarge's products; and *(b)* independents (and for one product, other majors) being stronger constraints for Tarmac's products than Lafarge.

Catchment area analysis

6.87 In addition to catchment areas for urban and non-urban areas, we also used separate catchment areas for Greater London as in some cases the associated radii were substantially different from those for urban and non-urban areas, particularly for Tarmac. We found that sales delivered from sites located in Greater London were more likely to be transported over shorter distances because of greater traffic congestion. Table 3 shows the radii we used.

TABLE 3 **Radii of catchments areas for asphalt based on 80 per cent of sales, 2010**

miles

	Lafarge	*Tarmac*
Greater London	[✂]	[✂]
Urban	[✂]	[✂]
Non-urban	[✂]	[✂]

Source: CC calculations based on data provided by the main parties.

6.88 We identified catchment areas where there were overlaps between the plants of Tarmac and Lafarge.

6.89 As our PCA identified a price effect of less than 0.5 per cent per nearby plant or no price effect for the asphalt products considered, we selected the possible problem areas using a fascia reduction filter (see paragraph 6.24). In particular, we identified possible problem areas, based on plant-centred catchment areas, where there was a fascia reduction from two to one or from three to two or from four to three (where the fourth competitor's market share by production volume was lower than 5 per cent).

6.90 This filter produced two possible problem areas. These are shown in Appendix I.

Competition dynamics in the possible problem areas

6.91 Of the two possible problem areas, we found that both were problem areas for asphalt. These are discussed and listed in Appendix I. We found that the proposed JV would be likely to result in an SLC in both of these markets.

RMX

6.92 Our local competitive assessment methodology for RMX is very similar to the one we used for primary aggregates and asphalt (see paragraphs 6.7 to 6.34, 6.87 and 6.89). As such, we only discuss the results of the methodology used for RMX. As explained in paragraph 5.48, in our competitive assessment we considered the market for RMX (produced either by fixed or by site plants). The location and size of site plants are considered on a case by case basis in the assessment of possible problem areas. Constraints from volumetric trucks are also considered in the local assessment of possible problem areas.

6.93 As noted in paragraph 6.85, the main parties made a number of comments in relation to the methodology we adopted for our local competitive assessment and these comments applied in general to all our local market analysis, including RMX. We have considered these comments in paragraphs 6.28 and 6.30. The main parties also made a number of points on the possible problem areas we found (see paragraph 6.100), all of which we considered in our local assessment (see Appendix I).

6.94 The main parties raised a number of arguments specifically in relation to our RMX competitive assessment. The main parties considered that:

(a) remaining competitors, many of which had substantial excess RMX capacity, would continue to constrain the JV entity;[140]

(b) actual entry, and the threat of entry, would continue to constrain the JV entity due to relatively low costs of entry into the production of RMX;

(c) volumetric trucks would continue to impose a competitive constraint for the supply of RMX; and

(d) existing RMX site plants should be excluded from the local radial analysis since competition between fixed plants and site plants occurred only during the competitive tender stage. According to the main parties, once a site plant had been set up, it did not compete in the local area to serve the general market. The main parties also highlighted that site plants could be deployed to serve a customer anywhere.

6.95 We considered all these points, and noted the following:

(a) We took account of the constraints from competitors' plants in calculating shares of production. In relation to competitors' excess capacity, our view is set out in paragraphs 6.278 to 6.280.

(b) In relation to entry, our view is set out in paragraph 6.287.

(c) As set out in paragraph 6.92, we took account of constraints from volumetric trucks in our local assessment of possible problem areas, in particular by considering shares of production of RMX excluding and including volumetric trucks.

(d) We calculated the radial distances for RMX including and excluding site plants and found very little difference between the two. For the purposes of assessing

[140] The main parties noted that, according to the customer survey (paragraph 51 of the GfK report), '[v]irtually no RMX competitors said they had been operating at full capacity, just over half (56 per cent said they had some spare capacity and 41 per cent said they had a lot of spare capacity'.

catchment area radii, we used a radius calculated excluding site plants (see Appendix I). When considering shares of production in the catchment areas, RMX site plants were included. We considered that site plants are in competition with fixed plants for customers. Suppliers assess whether to supply a customer via a fixed or site plant depending not only on the size of the job but also on the fixed plants they have available in the local area. We also noted that the location and size of site plants were considered on a case-by-case basis in the assessment of possible problem areas; however, there were no site plants in any of the possible problem areas we identified (see paragraph 6.100).

PCA

6.96 In terms of RMX, the PCA results did not show any association between Tarmac's RMX prices and the presence of a Lafarge plant nearby, nor between Lafarge's RMX prices and the presence of a Tarmac plant nearby. They did show some negative effects between Tarmac (and Lafarge) prices and the presence of independents and other majors nearby.

Catchment area analysis

6.97 Table 4 shows the radii we used.

TABLE 4 **Radii of catchments areas for RMX based on 80 per cent of sales, 2010**

	miles	
	Lafarge	*Tarmac*
Greater London	[✂]	[✂]
Urban	[✂]	[✂]
Non-urban	[✂]	[✂]

Source: CC calculations based on data provided by the main parties.

6.98 We identified catchment areas where there were overlaps between the plants of Tarmac and Lafarge.

6.99 As our PCA did not identify a price effect between the main parties, we selected the possible problem areas using a fascia reduction filter (see paragraph 6.24). In particular, we identified possible problem areas, based on plant-centred catchment areas, where there was a fascia reduction from two to one or from three to two or from four to three (where the fourth competitor's market share by production volume was lower than 5 per cent).

6.100 This filter produced eight possible problem areas. These are shown in Appendix I.

Competition dynamics in the possible problem areas

6.101 We found seven problem areas for RMX.[141] These are discussed and listed in Appendix I. We found that the proposed JV would be likely to result in an SLC in each of these seven markets.

[141] Dumbarton Concrete was not found to be a problem because the two relevant plants do not compete as they are separated by the Clyde Estuary.

Coordinated effects

6.102 Coordinated effects may arise when firms operating in the same market recognize that they are mutually interdependent and that they can reach a more profitable outcome if they coordinate to limit their rivalry.[142] As set out in the Guidelines, co-ordination can be explicit or tacit. Explicit coordination is achieved through communication and agreement between the parties involved. Tacit coordination is achieved through implicit understanding between the parties, but without any formal arrangements.[143]

6.103 When assessing coordination, the Guidelines set out that the CC will analyse the characteristics of the market that could be conducive to coordination. The CC will examine whether there is evidence that firms in the market were coordinating pre-merger. If so, the CC will examine whether the merger makes coordination more stable or effective, given the characteristics of the market. Whilst analysing any evidence of pre-existing coordination is an important step in investigating a coordinated theory of harm,[144] finding such evidence is neither a necessary nor a sufficient condition for finding an SLC based on coordinated effects. If there is no evidence of pre-merger coordination, the Guidelines set out that the CC will examine whether the merger makes it more likely that firms in the market will start to coordinate, given the characteristics of the market.[145]

6.104 The Guidelines set out that all three of the following conditions must be satisfied for coordination to be possible:

- Condition 1: firms need to be able to reach and monitor the terms of coordination;
- Condition 2: coordination needs to be internally sustainable among the coordinating group—ie firms have to find it in their individual interests to adhere to the coordinated outcome; and
- Condition 3: coordination needs to be externally sustainable, in that there is little likelihood of coordination being undermined by competition from outside the coordinating group.[146]

6.105 We noted that coordination was not an 'all or nothing' outcome, and different degrees of coordination were possible. Coordination may not be perfect, ie it may not lead to the same profits that a monopolist would achieve. Rather, it may lead to any level of profit between the competitive and monopolistic levels. In addition, coordination may not be continuous, it may not involve all market participants and there may be periods when it breaks down, with intense competition between firms during which there may be (for example) increased levels of customer switching activity and/or rapid reductions in prices.[147]

6.106 Applying the framework set out in the Guidelines, we assessed whether the proposed JV might be expected to give rise to an SLC in the bulk cement market through coordinated effects. First we examined whether market characteristics and outcomes

---

[142] The Guidelines, paragraph 5.5.1.
[143] The Guidelines, paragraph 5.5.3.
[144] The Guidelines, paragraph 5.5.8, sets out that, in general, a merger in a market already showing coordinated outcomes would be likely to make coordination more sustainable or more effective, unless the structure and scale of the merged firm is so different from those of its predecessors that the incentive to coordinate has been removed.
[145] The Guidelines, paragraph 5.5.4.
[146] The Guidelines, paragraph 5.5.9.
[147] See *The economics of tacit collusion*, final report for DG Competition by Ivaldi, Jullien, Rey, Seabright and Tirole and p246 of *The theory of industrial organisation*, by Jean Tirole, p10.

were consistent with a competitive market. We then examined the extent to which the three conditions set out in the Guidelines were met in the current market, and the extent to which they would be met following the changes brought about by the proposed JV. We took into account all the available evidence in forming an expectation as to whether or not the proposed JV would be likely to result in an SLC on the basis of coordinated effects.

6.107 We came to no conclusions on the scope for coordinated effects as a result of the proposed JV in the primary aggregates, asphalt and RMX markets we identified.

Market characteristics and outcomes

6.108 In accordance with the Guidelines, we analysed whether there was evidence of current coordination between UK cement producers in the bulk cement market. We examined whether there was evidence of any pre-existing coordination between all four major UK producers of cement (ie Lafarge, Tarmac, Cemex and Hanson) or a subset of these, given certain distinctive features of Tarmac's position in the market—see paragraphs 6.197 to 6.200.

6.109 To assess whether there was evidence of any pre-existing coordination, we looked (among other things) at observed market outcomes (production volumes, capacity utilization, market shares and margins). We examined whether or not these market outcomes, taken together, were consistent with a competitive market. In particular, we looked at:

(a) the trends in market shares and shares of production over time;

(b) evidence on the changes in cement margins over time in relation to changes in demand and available capacity;

(c) evidence from the price concentration analysis on cement;

(d) evidence from customers on the behaviour of UK cement producers in relation to cement sales; and

(e) evidence on customer switching.

6.110 We also looked at evidence from internal documents from the main parties and the other UK majors to assist us in understanding the nature of competition between UK cement producers and interpreting the evidence on market outcomes.

6.111 We noted that, during the period from 2001 to 2010, there had been a number of significant changes in the UK cement market:

(a) Changes in ownership and increased vertical integration into RMX production, resulting in the present structure of the industry, which is characterized by four vertically integrated UK producers of cement which—with the exception of Tarmac—are part of global construction businesses (see paragraph 2.25). These changes included the acquisition of RMC Group by Cemex in 2005, the acquisition of the GGBS business of Civil & Marine (the exclusive UK producer of GGBS) by Hanson in 2006[148] and the acquisition in September 2007 of Hanson (which previously had no in-house supply of cement) by Heidelberg (which

[148] Hanson acquired Civil & Marine's marine aggregates business in 1995.

already owned Castle Cement). These changes were followed by large changes in cross-sales of cement between the majors (see Appendix P).[149]

(b) There were also some changes in capacity in the period. Tarmac invested in a new cement plant (Tunstead) at Buxton in 2004 (increasing capacity from [✂] to [✂]), and then increased capacity at Tunstead by a further [✂] in 2008. There was a large reduction in Lafarge's cement production capacity in 2009 with the closure of its Northfleet plant, which was Lafarge's largest plant in terms of cement capacity (about [✂]Mt of cement per year). Hanson also reduced capacity during the period. Hanson mothballed about [✂] of capacity in 2008 (at Ketton).

(c) There was a large fall in demand for cement, and thus in production, in 2008 (a 16 per cent drop in production in Great Britain) and an even larger fall in 2009 (a further 25 per cent drop in production in Great Britain).

Market and production shares of the UK cement producers over time

6.112 Our detailed analysis of data on the shares of the UK cement producers in terms of sales and production of UK produced cement over time is set out in Appendix K, and our analysis of the overall share of UK cement producers in terms of total sales of bulk cement (including imported cement) is set out in Appendix Q.

6.113 Table 5 shows the market shares for 2008 to 2010 for sales of bulk cement in Great Britain (including both internal and external sales).[150] Our detailed analysis of cement imports is set out in Appendix Q. We found that Lafarge lost share between 2008 and 2010, from [✂] per cent in 2008 to [✂] per cent in 2009 and 2010, whereas Tarmac increased its share (from [✂] to [✂] per cent) and the shares of Cemex and Hanson remained stable. The share of importers increased, from [✂] per cent in 2008 to [✂] per cent in 2009 and 2010. From this table, it appeared that most of the increase in market share by importers between 2008 and 2010 was at the expense of Lafarge volumes, while Cemex and Hanson maintained stable shares and Tarmac increased its share.[151]

[149] In particular, Hanson switched from purchasing [✂] from Lafarge to internal sourcing of these volumes in 2009. We noted that, despite this large-scale asymmetric change in purchasing arrangements, Lafarge maintained a relatively stable total share of production compared with Hanson in 2009. In 2010 the relative shares of Lafarge and Hanson were the same as in 2008 prior to the large-scale repatriation.

[150] We excluded production and sales of cement in Northern Ireland since the market structure appeared to be different there for several reasons including *(a)* Lafarge is the only UK major that produces cement in Northern Ireland; and *(b)* Northern Ireland's land border with the Republic of Ireland may make imported cement more competitive than elsewhere in the UK.

[151] The main parties told us that it would be irrational for Lafarge to have coordinated with Cemex and Hanson to lose [✂] percentage points of share of supply of bulk cement to non-majors in GB in three years. In this context, we noted that, between 2008 and 2010, Lafarge's loss of market share was to the benefit of importers, Aggregate Industries and Tarmac and not to Hanson and Cemex. Moreover, Lafarge's loss of share coincided with the closure of one of Lafarge's cement plants. Closure of the least efficient plants in a downturn was consistent with a competitive outcome (least efficient plant exit) or with a coordinated outcome (in which the coordinating group closes capacity where it is less costly to do so).

TABLE 5 **Great Britain market shares for bulk cement by volume**

per cent

	2008	*2009*	*2010*
Lafarge	[30–40]	[30–40]	[30–40]
Tarmac	[0–10]	[10–20]	[10–20]
Cemex	[20–30]	[20–30]	[20–30]
Hanson	[20–30]	[10–20]	[20–30]
Aggregate Industries*	[0–10]	[0–10]	[0–10]
Importers (non-domestic)	[10–20]	[10–20]	[10–20]

Source: CC, based on UK producers' data and MPA estimates.

*Shares for Aggregate Industries are based on its total sales of the cement which it imports to its downstream businesses and external customers.

6.114 Table 6 shows each of the UK producers' share of Great Britain cement production between 2001 and 2010, as well as total Great Britain production in each year and the year-on-year change in total Great Britain production.

TABLE 6 **Shares of Great Britain production of cement by volume, 2001 to 2010**

	Lafarge %	*Tarmac* %	*Castle/ Hanson* %	*RMC/ Cemex* %	*Total GB production* kT	*Year-on-year change in total production* %
2001	[50–60]	[0–10]	[20–30]	[10–20]	[✂]	
2002	[50–60]	[0–10]	[20–30]	[10–20]	[✂]	0
2003	[50–60]	[0–10]	[20–30]	[20–30]	[✂]	2
2004	[40–50]	[0–10]	[20–30]	[10–20]	[✂]	1
2005	[40–50]	[0–10]	[20–30]	[20–30]*	[✂]	–2
2006	[40–50]	[0–10]	[20–30]	[20–30]	[✂]	3
2007	[40–50]	[0–10]	[20–30]†	[20–30]	[✂]	4
2008	[40–50]	[0–10]	[20–30]	[20–30]	[✂]	–16
2009	[40–50]	[10–20]	[20–30]	[20–30]	[✂]	–25
2010	[40–50]	[10–20]	[20–30]	[20–30]	[✂]	5

Source: CC, based on data on cement production provided by the main parties and other majors.

*Cemex acquired RMC in 2005.
†HeidelbergCement acquired Castle Cement in 1998 and Hanson in September 2007.

6.115 There has been some variation in the shares of Great Britain production held by the major UK cement producers over the past ten years: Lafarge has lost share (from [✂] to [✂] per cent) as has Hanson (from [✂] to [✂] per cent in ten years). Cemex and Tarmac have both increased their share (from [✂] to [✂] per cent for Tarmac, and from [✂] to [✂] per cent for Cemex). Nevertheless, the data shows a degree of stability in the shares of the cement majors in the face of major changes in demand, capacity and ownership from 2007 to 2010.[152] The relative shares of Hanson and Lafarge in relation to each other have remained broadly stable, with Lafarge consistently having almost [✂] the share of Hanson since 2003.

6.116 The degree of stability of these shares of production when market demand increased in 2006 and 2007 and then fell sharply in 2008 and 2009, and where there had been changes in ownership and significant excess capacity for cement production since

[152] Lafarge did not agree that shares were stable. It also said that changes in ownership were not something that could be expected to cause changes to market share as there was no consolidation in the cement market during this period. However, we considered that changes in ownership were relevant, since *(a)* one of the changes (Heidelberg's acquisition of Hanson) made an existing non-vertically-integrated competitor (Castle) vertically integrated into RMX and *(b)* all changes of ownership had the potential to change the relevant firm's strategy.

2008, appeared on the face of it surprising.[153] We would have expected to see different producers losing market share to different extents, according to their relative efficiencies.

6.117 As set out in Appendix K, we also calculated shares by product type and by type of customer (internal and external sales, including shares of external sales to independent customers). However, we were not able to calculate these shares over long time periods at these more disaggregated levels because of lack of data on sales prior to 2008 for some of the majors. We found that:

(a) there was more variation in shares by product type (CEM I and CEM II/III) compared with the data for shares of total cement production;[154] and

(b) in terms of relative shares of external sales and relative shares of external sales to independent customers, there had been changes in Hanson and Cemex's shares in 2009, but Lafarge's share had remained constant between 2008 and 2010.

6.118 However, we continued to consider that it was appropriate to focus our assessment on shares of total production, since this would drive each cement producer's overall profitability.

6.119 We found that the degree of stability in shares of production at the time of large changes in demand, changes in ownership and significant excess capacity for cement production was consistent with the existence of a degree of tacit coordination between at least some of the UK producers over that time period.

Cement margins

6.120 We analysed the variable profit margins[155] and the variable profit per tonne achieved by UK cement producers on their external sales of cement (ie excluding sales to their downstream operations) for the years 2007 (for Lafarge and Tarmac only, due to lack of data for the other majors), 2008, 2009 and 2010 (see Appendix L). We analysed profit margins on external sales, because internal prices are not necessarily a good benchmark to use in a margin assessment as each firm is free to set its own internal prices. As set out in Table 7, we found that all four major UK cement producers increased their variable profits per tonne in 2009 compared with 2008, despite the large reduction in demand for cement in 2009. These increasing variable profits per tonne sold and increasing variable profit margins appear to be inconsistent with cement producers competing for sales in a market with falling demand and excess capacity.

6.121 In a competitive market, we would expect cement margins to have dropped in 2008 and 2009 when there was a large drop in demand (particularly when combined with large increases in the costs of key inputs to cement production at this time, ie fuel and electricity). Indeed, with falling demand and large excess capacity, cement producers in a competitive environment would have strong incentives to compete on

---

[153] Cemex said that we asserted that market shares were stable, but failed to provide a relevant metric to measure the degree of stability or a critical threshold for stability. Cemex argued that therefore such an observation lacked objectivity. However, as set out in this paragraph, we placed weight on the degree of stability of market shares in the context of large exogenous changes in the market, rather than on absolute stability in shares as such. Further, analysis of changes in shares was only one piece of evidence we used in assessing whether market outcomes were consistent with some degree of coordination. Such an assessment is not an absolute concept, and we considered all the factors we identified together.

[154] At an individual product level, we were only able to calculate shares for the past three years (2008 to 2010) due to limited availability of data.

[155] Variable profit margin can be broadly defined as sales revenue less direct cost of sales.

prices to increase their sales. In our view, this should have been likely to result in reductions in the variable profit per tonne sold in 2009 (possibly, quite substantial falls).

TABLE 7 **Variable profits per tonne and variable profit margins for cement**

	FYE 31 December			
	2007	*2008*	*2009*	*2010*
Tarmac				
Variable profit/t (before carbon trading) (£/t)	[✂]	[✂]	[✂]	[✂]
Variable profit margin (before carbon trading) (%)	[✂]	[✂]	[✂]	[✂]
Lafarge				
Variable profit/t (before carbon trading) (£/t)	[✂]	[✂]	[✂]	[✂]
Variable profit margin (before carbon trading) (%)	[✂]	[✂]	[✂]	[✂]
Cemex				
Variable profit/t (before carbon trading) (£/t)	[✂]	[✂]	[✂]	[✂]
Variable profit margin (before carbon trading) (%)	[✂]	[✂]	[✂]	[✂]
Hanson				
Variable profit/t (before carbon trading) (£/t)	[✂]	[✂]	[✂]	[✂]
Variable profit margin (before carbon trading) (%)	[✂]	[✂]	[✂]	[✂]

Source: Anglo American, Lafarge, Cemex and Hanson.

6.122 Lafarge told us that the fact that margins had not reduced when demand fell in 2009 was not evidence of the CC's apparent theory of coordination. It told us that the market evidence indicated substantial switching activity in 2009: switching increased and prices fell. We agreed that there was an increase in switching activity in 2009 (both for customers won and lost), as we would expect in a market experiencing a large change in demand. The main parties also provided evidence showing that the prices of CEM I sold to non-majors had reduced between February 2009 and December 2010, following Hanson's decision to internally source [✂]. Lafarge told us that its prices for bulk external CEM I cement sold to non-majors had [✂] between January 2009 and December 2010 (£[✂] per tonne fall over the period) and by £[✂] over the period February 2009 to December 2010. Similarly, Anglo American also submitted data from Tarmac showing a [✂] in prices of £[✂] per tonne between January 2009 and 2010.[156]

6.123 We accepted that there was some reduction in prices of cement after January 2009, although our analysis showed that, overall, average prices of CEM I paid by external customers increased between January 2009 and December 2010: Lafarge's average prices per tonne to independent customers increased by [✂] per cent for CEM I and CEM II in 2009. There was a reduction in average prices in 2010, but this reduction was very small compared with the increases in the previous years (a reduction by [✂] per cent for CEM I and [✂] per cent for CEM II). Overall, we thought that the increased switching activity in 2009 (and any reductions in prices observed) could indicate that the large reduction in demand for cement resulted in more competition between UK cement producers. It could also suggest that, if UK cement producers had been tacitly coordinating, the reduction in demand resulted in some deviations and/or retaliation.

6.124 Even if we were to accept that there had been increased switching (or reduced prices) during this period, it was striking that all UK cement producers had either maintained or increased their variable margins over the 2008 to 2010 period despite the significant drop in demand and large variations in their cost bases.

[156] On average prices of cement of the order of £75 per tonne.

6.125 The main parties also told us that in 2008 they had to increase prices mid-year because of a spike in energy costs. This had the potential to put pressure on cement producers' gross margins (because producers might compete on the extent to which such cost increases were passed through to customers) but our analysis showed that in fact this had limited impact: average variable margins did not reduce between 2007 and 2008 (as set out in Table 7 above).

6.126 Lafarge told us that, when setting prices for cement, it measured performance of the cement business by the return on capital employed (ROCE), and did not consider margins over variable cost to be the correct metric for our assessment. It told us that prices were not excessive at present (since Lafarge's ROCE did not systematically and substantially exceed its weighted average cost of capital) and therefore lowering prices would not be sustainable.[157] However, we considered that *(a)* in a competitive market for a homogeneous product, a producer would not need to reduce its prices by much to increase substantially its sales; and *(b)* given the lack of transparency in prices of cement (see Appendix M), it should have been possible for Lafarge to offer reduced prices to some customers in order to increase volumes without affecting margins on all of its existing customers.[158] We therefore considered that any such increase in volumes sold would increase profits (all other things being equal), and would therefore appear rational in such a market.

6.127 During our margin analysis, we noted that the variable cost ratios and variable costs per tonne figures for Lafarge, Cemex and Hanson showed similarities in cost structures. Similarities in cost structures are a factor that may facilitate coordination by increasing the transparency in the market and by making the incentives of the majors more aligned (this is discussed further in paragraphs 6.226 and 6.227).

Price-concentration analysis

6.128 As set out in paragraph 6.9, we conducted a price-concentration analysis (PCA) for cement sales in the UK. Details of the methodology we used and the results are set out in Appendix H. Results from this PCA suggest that the presence of a Hanson or of a Cemex plant within 50 miles has no statistically significant effect on Lafarge's external sales price for cement.[159]

6.129 These results are consistent with a market in which Hanson and Cemex do not impose a strong constraint on Lafarge's prices for cement. We recognized that the results of our PCA were consistent with, but did not prove the existence of, a degree of pre-existing coordination (between Cemex, Hanson and Lafarge) in the market and that there were also other possible explanations for the results we obtained, such as vigorous competition. However, in light of the other evidence we assessed which did not indicate vigorous competition, we did not believe this to be a plausible explanation for our results. As set out in paragraph 6.109, we considered the results of our PCA with the other evidence available to us in the round in assessing whether

---

[157] Lafarge also argued that our taking into account the main parties' analysis showing that [✂] would be consistent with the CC's approach to profitability in the CC's final report on the Wienerberger Financer Service/Baggeridge Brick merger inquiry (2007), in which coordinated effects were also considered in a merger assessment. However, our argument is not that profits are excessive, but that in a fully competitive market, we would have expected margins to have dropped in 2009 when there was a large drop in demand. This would have been particularly likely when combined with large increases in the costs of key inputs to cement production at that time, ie fuel and electricity.

[158] The main parties told us that they did [✂] to [✂] in 2009. We accepted that there may have been some [✂] for [✂] in particular cases, although we noted that cement prices had increased on average between January 2009 and December 2010.

[159] The presence of a Tarmac plant had a weak statistically significant effect on Lafarge's external prices of cement, but this result was only apparent when the largest customers were excluded, and the main parties told us that this result was driven by a small number of job sites which were within 50 miles of Tunstead but were not within 50 miles of Lafarge's nearby Hope plant.

market outcomes were consistent with some degree of pre-existing coordination between cement producers.

Evidence from customers on the behaviour of cement producers

6.130 We examined some evidence from cement customers about the behaviour of the UK cement producers, including claims that, on occasion, certain producers had appeared to refuse to supply cement. This evidence was inconclusive. We noted that, in any event, it would not be necessary for the UK producers to refuse to supply particular customers in order to coordinate (for example) on shares of production or wins and losses of customers.

Evidence on customer switching

6.131 The evidence on customer switching (which is reviewed in Appendix O) was not conclusive. It showed that there was more switching activity in 2009 than in 2010, which could indicate that the reduction in demand for cement resulted in more competition between UK cement producers and/or otherwise destabilized the market. It could also suggest that, if UK cement producers had been tacitly coordinating, the reduction in demand resulted in some deviations and/or retaliation. We also noted that the relatively low levels of switching observed in 2010 could be due to the threat of switching acting as a constraint on cement producers, and therefore could also be consistent with a competitive market. However, we considered that the stability of margins and shares of production in the face of significant changes in market conditions during this period was more significant than changes in switching activity during the period.

Our views on market characteristics and outcomes

6.132 The evidence we reviewed indicated that there were aspects of the market that were not consistent with a competitive market but were consistent with a degree of pre-existing tacit coordination.[160] That evidence included:

(a) pricing behaviour and sustained margins that did not appear to be consistent with the excess capacity in the industry. In particular, increases in the variable profits per tonne of cement over the period 2007 to 2010 appeared inconsistent with cement producers competing for customers in a market with falling demand and excess capacity;

(b) the degree of stability of shares of production at the time of large changes in demand and in the structure of the industry;[161] and

(c) the results from our PCA which were consistent with several explanations, including the existence of a degree of coordination in the market.

6.133 We proposed a model for coordination in light of our analysis set out in paragraphs 6.108 to 6.132 and 6.134 to 6.202. We describe this model here to provide context for the analysis and discussion which follow. We considered that coordination in the

[160] We noted that some of the evidence could also be consistent with non-coordinated behaviour, but we assessed all the evidence together in coming to our view.
[161] The main parties told us that the growth in Great Britain share of supply of independent RMX producers at the expense of the majors was inconsistent with pre-existing coordination. We did not agree that this was inconsistent with a degree of pre-existing coordination. As set out in paragraph 6.133 we considered that coordination, if it existed, was on all upstream sales of cement (whether sold through independents or through vertically integrated RMX producers). We did not argue that the majors would coordinate to foreclose independent RMX producers.

bulk cement market, if it existed prior to the JV, would be most likely to operate in the following way:

(a) The coordinating group (which would not include Tarmac or importers) would coordinate on the basis of shares of total production and/or wins and losses of customers, rather than directly on prices.

(b) The coordinating firms could monitor coordination via monitoring of wins and losses of their own customers and/or by monitoring the changes in their total share of production, as well as signalling any future intention to change price through issuing price announcement letters and monitoring of others' price announcements.

(c) Repatriation (ie the bringing of volumes purchased from another producer back into in-house supply) of small volumes of cement could act as an additional signal to potential deviators to stop current deviations without necessarily getting into costly retaliatory actions. Deviations could be punished by lowering cement prices to independent cement customers, or by reducing prices charged by integrated RMX businesses to RMX users. In some circumstances, repatriation could also be used as a punishment.

(d) The coordination would result in higher prices for UK cement overall to all end-users of cement including RMX end-customers (not just for cement sold externally, or for cement sold externally to independent customers) than if the market was competitive.

Assessment of the three conditions for coordination before the proposed JV

6.134 We now review the evidence on the extent to which the necessary conditions for coordination to emerge (as set out in the Guidelines) are likely to be satisfied in the bulk cement market at present, on the lines of the model of coordination set out in paragraph 6.133. We then consider the effect of the changes in the market as a result of the proposed JV in paragraphs 6.203 to 6.263.

Condition 1: ability to reach and monitor coordination

6.135 The Guidelines state that, for coordination to emerge, the firms involved need to be able to reach a common understanding about their objectives (for example, a price below which they cannot sell).[162] To sustain coordination, firms will generally need to be able to monitor each other's behaviour sufficiently to ensure that deviation from the coordinated outcome can be detected.[163]

6.136 We therefore assessed the evidence on whether cement producers have the ability to reach a common understanding and whether they have the ability to monitor coordination.

Ability to reach a common understanding

6.137 The Guidelines state that, in assessing whether the firms in a market would be able to reach an understanding on the terms of coordination, the CC may consider, for example:

---

[162] The Guidelines, paragraph 5.5.10.
[163] The Guidelines, paragraph 5.5.12.

(a) the number of firms in the market—the fewer the firms, the easier it will be to reach an understanding; and

(b) the degree of complexity in the environment in which firms interact, for example in terms of the number and type of products sold, number of relevant competitive variables (price and non-price factors), differences in product portfolios, customer mix, strategies—the more complex this environment, the more difficult it will be for firms to reach a common understanding.

6.138 The UK cement industry is very concentrated. There are only four UK cement producers. No new entry has occurred over the last decade and only limited capacity expansion (mainly by Tarmac) has taken place. In addition, there are a number of 'structural' and 'non-structural' links between these producers. They are all involved in various JVs with one another (see Appendix C), although most of these are for aggregates and there are only two JVs for the supply of cement. They all belong to the Mineral Products Association (MPA).[164] The majors tend to buy, regularly and in significant amounts, cement from one another (although this has become less prevalent in recent years, principally because they have become more vertically integrated), and therefore are involved in customer/supplier relationships. All these links may facilitate reaching a common understanding.

6.139 The environment in which UK cement producers interact does not appear particularly complex. The product is relatively homogeneous[165] and the geographic areas over which cement can be transported are quite large. Also, there are only 12 plants producing cement in the UK, and the cost structures of Lafarge, Cemex and Hanson are not dissimilar (see paragraph 6.127) which would enhance firms' ability to reach a common understanding. This lack of complexity means that the number of variables on which cement producers would need to have a common understanding is likely to be small.[166]

6.140 We noted that there was considerable variation in the extent of vertical integration of the UK cement producers, in terms of the amount of cement they used in their downstream RMX and concrete product businesses (see Table 9). Lafarge is currently the least vertically integrated cement producer and Tarmac is currently the most vertically integrated cement producer. Given however that all the UK cement producers are vertically integrated to some extent, we did not think that these differences in the degree of integration made the market too complex for coordination to arise (although reductions in these differences would, in our view, increase the internal sustainability of any coordination—see paragraph 6.238).

6.141 The fact that shares of cement production had not changed much in the face of major changes in demand and when there has been significant excess capacity (see paragraphs 6.113 to 6.119) suggested to us that the main variables on which cement producers could coordinate were likely to be shares of production and/or wins and losses of customers. We also analysed evidence on price announcement letters to see if these had been, or could be, used by UK cement producers to signal to each other the timing and direction in which cement prices should evolve under a coordinated outcome. The details of our analysis are set out in Appendix M.

---

[164] The MPA is the trade association for the aggregates, asphalt, cement, concrete, lime, mortar and silica sand industries. It has a membership of 430 companies.
[165] This is set out in more detail in paragraphs 5.8–5.12.
[166] The Guidelines state in paragraph 5.5.11 that 'Where there are fewer products and the aspects of competition over which firms compete are simpler, it may be easier for the firms in the market to identify a focal point around which to coordinate'.

6.142 Cement producers regularly send out letters to their existing customers to notify them that the producer in question plans to increase its prices for cement. We found that there was a considerable degree of parallelism between the UK cement producers in both the dates of announced price increases for cement and in the amounts of increases announced.

6.143 Many of these price increase announcements were for January in each year, which is standard practice in many industries. However, there was one mid-year price announcement (August 2008) which was notable because the timing was unusual: the majors announced the price increase within less than a week of each other (and three of the four majors announced the price increase within two days of each other) and the sizes of the announced price increases were particularly close. Lafarge told us that the August 2008 announcement was driven by increased distribution costs, which all cement producers faced equally and at the same point in time, which explained the similarities in the timing and amount of the increases. Anglo American told us that the August 2008 announcement followed a spike in the price of oil [✂]. Further, Anglo American told us that customers were generally aware of impending price increases before they happened, as a result of being forewarned by their cement suppliers, and that this information then travelled from customers to other cement suppliers, which explained the parallelism in price announcements. Hanson told us that the August 2008 price increase was wholly driven by unprecedented levels of fuel and energy costs.

6.144 The analysis of the letters also revealed that Lafarge usually acted as the first mover for price increase announcements, and that usually the response of the other majors was accommodating in that they followed by announcing a slightly larger increase than the first mover. This tendency was noted in various internal documents from Lafarge and other majors. Anglo American told us that [✂]. This suggested to us that the UK cement majors might have been signalling that they would accommodate the price increases of the other majors. The price increases announced were often in the same format (ie £ per tonne for bulk cement, rather than in percentage terms[167]), and very close to each other.

6.145 We also conducted an analysis of the extent to which realized price increases followed price increase announcements. We found that:

(a) in almost all cases that we analysed, [✂]; and

(b) the majors were generally [✂].

6.146 Overall, we considered it likely that the price announcement letters were one mechanism that the UK cement producers could have been using to signal to each other the timing and direction in which cement prices should evolve. The main parties and Hanson advanced other rationales for sending out the letters, including (according to Anglo American) that customers wanted to know that they were all being treated fairly, that customers felt the letters set a ceiling for subsequent negotiations, and that price announcement letters were a practical way of contacting a large number of customers. Lafarge told us that price negotiations with customers took place on a near-continuous basis and the price announcement letters served as a starting point annually for the next round of negotiations. In addition, Lafarge said that some customers required the letters in order to show internally or to their own customers as evidence of cost increases. Hanson submitted that it sent out price announcement letters to make customers aware of any increases, and that the

[167] Hanson told us that price increases were set in £ per tonne solely to ensure that they were clearer for customers.

customer then had the option to negotiate the level of increase (if any). Further, Hanson told us that in some cases, customers required price announcement letters, and that Hanson would expect that sending out such letters (to be followed by negotiation with customers) was standard practice in many sectors where there were a large number of customers. We accepted that there might be other motivations for sending out price announcement letters. However, we thought that they could also be used by UK cement producers to signal to each other the timing and direction in which cement prices should evolve.

6.147 Price announcements provide information to cement producers as to the level of price increases from which each cement producer will start negotiating. They may therefore have some role in reducing the risk of future deviations. For example, they reduce the risk that a cement producer may start negotiations from too low a price—in other words, they reduce the risk that a cement producer may inadvertently engage in negotiations that may lead to deviations (a risk that would otherwise arise as a result of the lack of transparency of actual prices). In addition, a customer that receives—or is aware of—price announcement letters showing very similar levels of price increases being announced by different suppliers may have reduced incentives to change supplier. This is because the customer may expect the negotiated or realized price to be similar irrespective of the supplier.

6.148 We therefore found that price announcement letters could assist the UK cement producers in coming to a common understanding on the timing and direction of price movements. However, we considered that the main variable on which UK cement producers might be able to reach a common understanding was unlikely to be realized prices, because these prices were individually negotiated and were not transparent. Rather, for the reasons set out in paragraph 6.141, we considered that the main variables that could act as focal points for coordination were more likely to be shares of production and/or wins and losses of customers.

Ability to monitor the coordination

6.149 We reviewed the evidence on whether cement producers had the ability to monitor each other's behaviour sufficiently to ensure that deviation from a coordinated outcome could be detected.[168]

6.150 Our analysis is set out in detail in Appendix N. We found that, although realized prices for cement were not very transparent, there was a high degree of transparency on total production of cement, capacity and companies' own market shares, enabling cement producers to infer each other's actions (including general pricing behaviour). Cement producers have many sources of information available to them on industry outcomes. Information provided by Lafarge showed that it was part of its commercial strategy to gather a significant amount of market intelligence through its sales force on cement users, their suppliers, and the volumes purchased, and that it was able to do so. In addition, our review of internal documents showed that UK cement producers had a high awareness of each other's actions.

6.151 We found that a company could with a fair degree of accuracy monitor its own share of total UK production and sales of cement with a one-month lag using publicly available information from the MPA. Even without knowing the market shares of competitors or directly observing prices charged by competitors, this may in many cases be sufficient to detect whether a deviation is likely to have occurred. If a competitor were to deviate (eg increasing its sales by lowering it prices to customers) this would result

[168] The Guidelines, paragraph 5.5.12.

in a reduction of the other producers' own shares of production. Each producer could therefore observe whether deviations had occurred by monitoring changes in its own share of production.[169]

6.152 We also reviewed the evidence on whether cement producers could complement market share monitoring with monitoring of whether their own customers were switching to other UK cement producers (given the evidence that Lafarge was already doing this through its sales force). We found that, although there was a relatively large number of cement purchasers, the customer base was concentrated. This means that, by actively monitoring a relatively limited number of customers (around 50 customers each in total), cement manufacturers would cover most of their own cement volumes. This monitoring could be carried out through contacts between sales representatives and these large customers to find out, in the event that these customers' volumes reduced, where they had started purchasing from and in what volume.

6.153 As an alternative or in addition to direct monitoring of large customers, cement producers could also complement information on market production and market share with information on lapsed customers. We found that, because customers tended to be regular purchasers, buying cement for use at fixed delivery points, and because they purchased from a single source in the majority of cases, monitoring of lapsed customers could also have been used to enable cement producers to identify whether a deviation has occurred.[170]

6.154 We also considered that information from the UK cement producers' in-house RMX operations could contribute to the ability to monitor the bulk cement market. This information would enhance understanding of cement pricing, demand conditions and supply relationships via sales of RMX into local RMX markets. The main parties made a number of arguments that information from in-house RMX operations would not enhance the ability to monitor the cement market. For clarity, we address these points in the context of our assessment of the effect of the proposed JV on the ability to monitor coordination (see paragraphs 6.219 to 6.221).

Conclusions on Condition 1: ability to reach and monitor coordination

6.155 For the reasons set out in paragraphs 6.135 to 6.154, we considered that the UK cement producers had the ability to reach and monitor the terms of coordination to some extent before the proposed JV.

---

[169] The main parties told us that the dramatic changes in demand over the period since 2007, together with the uncertainty of any recovery, suggested that monitoring and transparency were difficult and that market conditions were not conducive to coordination. However, the MPA publishes data on total UK production and sales of cement with a one-month lag. This means that, even if demand is changing, cement producers would be aware of the changes within a month. In addition, as set out in paragraphs 6.120–6.127, we found that the UK cement producers had managed to maintain or even increase variable margins when demand fell, which suggested that the changes in demand had not been a large destabilizing factor for the industry.

[170] Cemex argued that there would be significant distortions in the information available to a given cement producer on customer volumes won by a particular rival, such that that information could not be relied on to monitor compliance with the coordinated outcome. We considered that shares of GB production could be monitored adequately by the mechanisms set out in paragraphs 6.149–6.154. Each producer would have knowledge of its own share (from the MPA data) and knowledge of its own wins and losses. This would allow deviation to be distinguished from other factors (such as disruptions in production and changes in overall demand), and changes in rivals' shares to be monitored. We considered that there would be sufficient immediacy in these sources of information to permit effective monitoring, with the MPA data available with only a one-month lag, and wins and losses of large customers being swiftly apparent through reduction in/cessation of deliveries. Any differences between volumes reported in the MPA data and actual volumes (eg as a result of the MPA data being based on surveys rather than management accounts) appeared likely to be small and, critically, unlikely materially to affect the month-on-month changes to reported shares. Other sources of information for estimating total Great Britain production (such as company filings, press reports, environmental and planning applications) might only be able to give rough estimates of production, but could still serve as a useful adjunct to the MPA data and the monitoring of customers won and lost.

Condition 2: internal sustainability

6.156 Coordination will be internally sustainable (ie within a coordinating group of firms) only where the additional profit from coordination is sufficiently high, and there is a credible and effective mechanism to punish deviations. If coordination is not sufficiently profitable, or the punishment is not believed to be sufficiently likely, swift and costly to the deviator, a firm may prefer to deviate.[171]

6.157 To assess internal sustainability, we therefore reviewed evidence on:

(a) the potential profit from coordination compared with the profit from competition; and

(b) the existence of a mechanism (or mechanisms) for punishment which is swift and costly to the deviating firm.

The benefits from coordination

6.158 Cement is a relatively homogeneous product. Although there are different types of cement (CEM I, CEM II and CEM III), within these categories it appears that there is very little differentiation within each type of cement, eg CEM I produced by one UK producer and CEM I produced by another UK producer.[172] The only differentiation, within a type of cement, appears to be the location of the plant producing the cement. However, catchment areas (especially for plants with rail connections) are generally large for cement so there is little geographical differentiation.

6.159 The implication of this lack of differentiation is that, absent some form of coordination, competition between cement producers on prices would be strong in times of excess capacity (and hence returns would be low) because customers would be readily able to switch between suppliers. The absence of switching costs for customers would also point towards strong competition absent coordination.

6.160 In these circumstances, the incentives to coordinate are high, because otherwise there is likely to be strong competition and limited returns in periods of excess capacity.

6.161 Within a coordinating group consisting of Lafarge, Cemex and Hanson (see paragraph 6.133), incentives to deviate would appear to be low in that there are broad similarities in the size and structure of these firms.[173] Any potential harm to the other members of the group from deviation would appear to be sufficiently large to make it worthwhile for a punisher to pursue the deviator. More generally, the smaller the number of participants in any coordinating group, and the more similar they are in terms of their size, the greater the internal sustainability of any coordination.

Mechanisms for punishment of deviations

6.162 The fact that profits from coordination are potentially much larger than profits from competition is not sufficient for coordination to be internally sustainable: firms must also have an incentive to adhere to the coordinated outcome, rather than unilaterally

---

[171] The Guidelines, paragraph 5.5.15.
[172] Hanson told us that there were some specific technical issues that could affect a customer's ability to swap CEM I purchases from one producer to another, including alkalinity (restricting the ability to use certain cements with certain aggregates) and chloride levels (restricting the ability to use certain cements in certain applications). However, we had no evidence that such technical issues reduced the interchangeability of CEM I to any material extent.
[173] We recognized that there was some variation in the extent of vertical integration of these firms (see Table 9).

deviating from the coordinated outcome to further increase their profits. If a firm thought that the other firms in a coordinating group would not respond to it reducing its prices (which would lead to an increase in its sales and returns), that firm would have incentives to deviate from the coordinated position. Coordination will be internally sustainable if coordinating firms believe that deviations will be followed by a period of punishment, such that the losses of profit due to punishment are larger than the benefits from deviation.

6.163 As set out in paragraphs 6.149 to 6.155, we concluded that companies within a coordinating group of UK cement producers would be able quickly to detect deviation from a coordinated outcome and identify the deviator. We then examined the evidence on their ability to punish any deviation by imposing costs on the deviator. We also assessed whether such punishment would be sufficiently swift and costly to a deviating firm that it would not regard deviation to be an attractive option, and sufficiently cheap to the punishing firm for it to be attractive to the punisher.

6.164 Over the period of time for which we had data, we did not see evidence that would suggest that there had been a significant breakdown in any possible pre-existing coordination, for example a price war. We noted that it was therefore difficult to find evidence as to precisely how deviation would be punished. However, we considered three ways in which UK cement producers might punish a potential deviator. In doing so, we noted that punishment mechanisms that maximized the cost imposed on the deviating firm while minimizing the costs for producers more generally (eg by limiting the downward pressure on prices across the market) would be more effective than ones that did not. The three main punishment mechanisms we considered were:

(a) targeting the cement customers of the deviator;

(b) repatriating cement volumes; and

(c) punishing the deviator in a related market (eg reducing the price of RMX in local areas or repatriating aggregates volumes from the deviator).

6.165 The first two of these punishment strategies rely on the availability of sufficient spare cement capacity among the coordinating firms to enable them to punish the deviator by taking business from it, although if punishment can be targeted and/or punishment only has the aim of replacing sales volumes that have been lost to the deviator, this does not necessarily imply the need for large amounts of spare capacity.[174] We therefore analysed whether there was average spare capacity for cement production in the UK.[175] This analysis is presented in Appendix K.

6.166 Table 8 summarizes the amount of average spare capacity for each major UK cement producer in 2010 (the last year for which we had complete data). Table 8 shows that all the majors had large amounts of average spare capacity in 2010, with the exception of Tarmac whose average spare capacity was low ([✂]). Lafarge has the largest total average capacity in the UK ([✂]).

[174] The third punishment strategy would depend on the existence of spare capacity in the related markets.
[175] We acknowledge that the main parties told us that there was some seasonality in the demand for cement and that hence in some periods there might be limited spare capacity while in others there might be more, compared with the average spare capacity indicator.

TABLE 8 **Great Britain cement capacity, production and utilization in 2010**

	*Nameplate capacity tonnes**	*Production tonnes*	*Utilization %*	*Excess capacity tonnes*
Hanson*	[✂]	[✂]	[✂]	[✂]†
Cemex	[✂]	[✂]	[✂]	[✂]
Tarmac	[✂]	[✂]	[✂]‡	[✂]
Lafarge	[✂]	[✂]	[✂]	[✂]

Source: Hanson, Cemex, Anglo American and Lafarge

*Nameplate capacity indicates the design capacity of each producer's operational cement production facilities, which is based on assumptions about inputs and efficiency. In practice, actual capacity may be lower than nameplate capacity.
†Hanson excess capacity figures do not take account of capacity which has been mothballed but could be brought back into operation within three to six months. These figures are therefore likely to underestimate Hanson's total excess capacity.
‡[✂]

6.167 Cemex did not agree that the majors had significant spare cement capacity. It pointed out that, according to Appendix K, paragraph 54, the CC appeared to accept that Lafarge had operated at close to full capacity between 2001 and 2008, and that it had only had spare capacity since 2009. Further, Cemex noted that Hanson operated at full capacity in 2006 and 2007 (Appendix K, paragraph 45), and Tarmac had operated at close to full capacity for most of the past ten years (Appendix K, paragraph 37). However, our analysis in Appendix K (summarized in paragraph 57) showed that there was currently sufficient spare capacity in absolute terms to allow punishment via the mechanisms we identified. In any event, as set out in paragraph 6.165, if punishment can be targeted—and/or punishment only has the aim of replacing sales volumes that have been lost to the deviator—there is little or no need for large amounts of spare capacity. Further, capacity for large-scale punishments did not appear to have been necessary in recent years in the bulk cement market, as we did not see evidence to suggest that there had been a significant breakdown in any possible pre-existing coordination over the period of time for which we had data.

6.168 The ability to punish also depends on whether customers can easily switch volumes between cement producers if they are given the incentive to do so. We therefore looked at whether there were any long-term contracts between cement producers and their customers that might prevent customers from switching and therefore limit the effectiveness of punishment strategies (as well as the profitability of deviation in the first place, since any potential deviator would have fewer 'out-of-contract' customers to target). This did not appear to be the case:

(a) The main parties and the other cement majors told us that most purchases of cement were negotiated bilaterally, on a relatively informal basis. Lafarge told us that there were relatively few formal, stand-alone contracts for cement.

(b) We were not aware of any long-term formal contracts between cement producers and their independent customers.

(c) Even between the majors, we found that cross-sales were ad hoc in most cases and, as we set out below, there were frequent examples of majors switching or repatriating purchases of cement, which suggested to us that it was easy to do so.

(d) The only more formal arrangement for cement purchases between the majors of which we were aware [✂].[176]

[176] [✂]

6.169 Having established that there was sufficient spare cement capacity to enable punishment strategies to be effective, and that there were very few long-term contractual arrangements for cement purchasing which might undermine such strategies, we then considered each of the punishment strategies set out in paragraph 6.164 further.

6.170 Cemex submitted that there were limitations to these punishment mechanisms that would make them logistically difficult and costly due to *(a)* a free-riding problem, in that each coordinating firm would prefer others to punish, to avoid incurring the costs of punishment itself; *(b)* there would be a lack of clarity in that non-punishing firms would not be able to monitor whether punishment had taken place; and *(c)* there would be a significant lag between the decision to increase capacity (to enable punishment) and when capacity became available. However, we considered that it was likely to be understood that the punisher would be the firm that had suffered the reduction in its share of production. Non-punishing firms would therefore not need to be able to monitor whether punishment had taken place. Further, punishment would not require additional investment in capacity in order to be feasible and effective. In particular, we noted that, with the exception of Tarmac, all domestic cement producers had excess capacity (to differing degrees) and therefore could expand production if they wished to do so to punish deviations. Cemex told us that the willingness of the would-be punisher actually to carry out the punishment was not a foregone conclusion. Whilst we accepted this, we noted that the large profits available from coordination rather than competition would be likely to provide incentives for punishers to act.

- *Punishment by targeting the cement customers of the deviator*

6.171 This strategy would entail members of a coordinating group punishing deviators by targeting reduced-price cement at the deviator's customers in order to reduce the deviator's sales of and/or margins for cement.[177]

6.172 As explained in paragraphs 6.150 and 6.168, customers of deviators could be targeted effectively given the lack of long-term contractual arrangements for cement purchasing and the data currently gathered and held by cement producers (which provides information on the identity of other cement producers' customers). Further, as set out in Appendix N, cement purchasers tend to purchase on a regular basis which means that the impact of punishment through independent customers could be swift, particularly if the larger customers of the deviator were targeted such that large volumes were at risk. We considered that cement customers were highly likely to be price sensitive given the homogeneity of the product. This was confirmed by evidence from our survey. We therefore considered that cement customers were likely to be easily convinced to switch if they were given a price incentive to do so.[178]

6.173 Our analysis of cement switching data (see Appendix O) suggested that patterns in customer switching were consistent with the existence of some signalling or retaliatory strategies based on volumes purchased by independent and integrated customers. We found that there was evidence of symmetry in the patterns of gains and losses between the majors: years with large losses of volumes to a particular major

[177] The main parties told us that offering lower prices to a competitor's customers was to be expected in a competitive market. Clearly any period of punishment within a coordinated market would be likely to result in more competitive outcomes in terms of prices. However, the key distinction is that in a coordinated market, this mechanism is used as a threat to sustain the coordinated outcome and results in higher prices on average than in a competitive market. Further, we would not necessarily expect to observe periods of punishment if coordination was stable.

[178] Our survey found that, for cement customers and RMX competitors who had switched cement suppliers in the past three years, price was the key reason for switching. The survey also found that price was the most important factor in deciding which type of cement to use for 54 per cent of cement customers and 48 per cent of RMX competitors.

were often characterized by large gains from that major in the same year, and years with low losses of volumes to a particular major were often characterized by low gains from that major in the same year.[179] [✂] We considered that this evidence was consistent with the existence of some form of retaliatory strategy. Lafarge told us that there had been high levels of switching and that the number of customers who were able to secure lower prices without switching (by threatening to switch) was comparable to those who actually switched. Lafarge argued that this was not consistent with coordination. We agreed that there had been relatively high levels of switching in some years, and particularly in 2009 at the time when the overall market demand reduced substantially. However, we disagreed that coordination would necessarily result in low switching: periods with high switching could indicate periods of breakdown in the extent of coordination (see paragraph 6.105).

6.174 We recognized that punishing deviators by targeting competitors' customers with reduced-price cement could also impose costs on coordinating firms as a whole if it destabilized prices throughout the market, with other customers demanding the same low prices being offered to the targeted customers. However, as noted in paragraph 6.148, we found that realized prices for cement were not very transparent, which would reduce the risk of such price 'leakage' because customers would not usually be aware of the prices being paid by other customers. For cement sold to RMX producers, the local nature of RMX markets would further decrease the transparency of realized prices for cement. Under these circumstances, punishment through targeted price reductions could be a relatively effective way to punish deviations.

- *Signalling and punishment through repatriation of cement volumes*

6.175 Appendix O shows that repatriation of cement volumes has in the past been common in the industry and that large volumes of cement have been repatriated by cement producers, in particular in 2009.[180] We also found that there was evidence in internal documents that repatriation of volumes had been used in a targeted manner and the analysis also suggested the existence of retaliatory strategies and/or the use of repatriation as a signalling device.

6.176 We analysed cross-sales of cement between the majors, since it is the existence of these cross-sales that makes repatriation possible. Our analysis is set out in Appendix P. We found that Lafarge is a net seller of cement (ie in total it produces more than it needs for its in-house cement-consuming businesses such as RMX production), and Tarmac is a net purchaser of cement. We recognized that Lafarge currently purchased less cement from the other majors than it had done previously, and therefore we considered that Lafarge did not currently purchase sufficient volumes from the other majors (and in particular from Hanson) to permit much repatriation by Lafarge. Therefore Lafarge has been limited in more recent times in its ability to use repatriation as a mechanism for discouraging deviation from the coordinated outcome or for signalling to the other members of a coordinating group that deviation had been detected (see paragraph 6.178). [✂] and [✂] are [✂]. [✂] and [✂] are [✂].

6.177 Currently, Lafarge has less in-house demand for cement than Hanson, Cemex and Tarmac because its in-house RMX business is smaller than the RMX businesses of Cemex, Tarmac and Hanson. This in turn leads to Lafarge having less need and less

---

[179] Cemex argued that [✂] in the sales volumes it had won and lost were much more likely to be due to [✂], rather than being evidence of deviation and retaliation. [✂] We accepted that [✂].

[180] Anglo American told us that any internalization of cement volumes that occurred was a one-off in 2009, as a result of increased vertical integration in the industry and the economic downturn. However, this was not consistent with our analysis (see Appendix O).

ability to purchase cement volumes externally, and less ability therefore to repatriate cement volumes in response to deviations or as a signalling device. Conversely, because Tarmac sells very small volumes to the other majors because of its position as a net purchaser of cement, it is difficult for the other majors to punish Tarmac by repatriating volumes away from Tarmac if Tarmac were a member of any coordinating group and it deviated. The main parties argued that any repatriation of particular cement volumes could only be done once, which would also limit the effectiveness of repatriation as a punishment mechanism.

6.178 Small-scale repatriation could be used as a signalling mechanism between the majors to indicate that deviation from the terms of coordination had been detected. Such signalling would only require minimal volumes of cross-sales and would be more effective, the greater the extent to which each market participant maintained a cross-sales arrangement with each other market participant. It would be a very cheap way to signal that deviations had been spotted, and would reduce the risk and costs of undertaking actual punishment either via lower prices or large scale repatriation.

6.179 In our review of internal documents provided to us by the majors, we found some documents that discussed the use of repatriation as a mechanism to signal to and/or retaliate against other cement producers. The relevant extracts from these internal documents included:

(a) An internal 2006 Lafarge email exchange between [✂] and [✂] discusses losses to Dudman Cement (which was purchasing cement from Teutonia, owned by Heidelberg, ie Castle's parent). The email states: [✂].

(b) In an email exchange between [✂] and [✂] regarding Cemex losses, it is stated: [✂].

(c) A set of Lafarge's internal documents in 2003 (memo, email and proposal) discuss a possible [✂]. In Lafarge's proposal, [✂].

- *Punishment by targeting the customers of the deviator in other related markets*

6.180 We noted that, as a result of the extent of multi-market contact between the majors, it was possible to envisage punishment of deviators in related markets (such as RMX and aggregates). We also noted that there were some indications in internal documents that the majors considered such options (see paragraph 6.179). Lafarge told us that, given the large gap between margins on incremental sales of aggregates and RMX products compared with cement, punishment in aggregates and/or RMX would need to be on a significant scale to effectively punish deviation in the cement market.

6.181 We considered that it would be feasible to punish deviations in the cement market through targeted reductions in the prices charged by the cement producers' integrated RMX businesses to RMX customers. The local scope of RMX markets would allow punishment to be targeted at specific geographic locations where it could have most impact on a particular deviator's operations. The main parties made a number of arguments about what they considered to be the impracticalities of punishment in RMX markets for deviation in the cement market. For clarity, we consider these arguments in the context of our assessment of the effect of the proposed JV on the ability to punish deviations (see paragraphs 6.231 to 6.238).

6.182 Lafarge told us that levels of cross-sales in aggregates were generally too low for repatriation of aggregates to be a credible punishment mechanism. Anglo American told us that punishment in aggregates would be unrealistic, given the large number of local markets with different competitors in each market. We did not analyse the

feasibility of punishment in aggregates markets in detail, given our views on the effectiveness of the other punishment mechanisms available (see paragraphs 6.171 to 6.181).

Conclusions on Condition 2: internal sustainability

6.183 In light of our assessment in paragraphs 6.158 to 6.182, we found that:

(a) Given the lack of differentiation between cement made by different UK producers (within each type of cement), and noting the large capital investment required to become a cement producer (see paragraph 6.284), the incentives to coordinate were large because, without coordination, it was likely that competition would be strong in times of excess capacity (and hence returns would be low).

(b) We found that (i) there was sufficient excess capacity in the cement market and (ii) customers were able to switch volumes sufficiently easily between cement producers to enable punishment strategies based on taking cement sales from a deviator to be effective.

(c) One mechanism for punishment would be to reduce cement prices to the deviator's external cement customers so as to reduce the deviator's cement volumes and margins. Such a mechanism appeared likely to be effective in this market given the lack of long-term contracts, regularity of cement purchasing and customer price sensitivity. The scope for such a punishment mechanism to disrupt the market in general (in pushing industry cement prices down) was limited by the limited transparency of realized prices for cement and the existence of a large number of local markets for RMX, and it might therefore be relatively inexpensive for the punishing firm to implement.

(d) Repatriation of cement volumes would potentially also be an effective signalling or punishment mechanism or both. It would be swift, targeted and (if used as a signalling mechanism) could reduce the risk of more costly punishment being required and (if used as a punishment mechanism) could be very costly to deviating firms while having a low risk of destabilizing the market. We found that repatriation had occurred regularly in the past three years, but that Lafarge had been constrained recently, compared with the other UK major producers, in its ability to repatriate because it was not currently a large buyer of cement for its own use.

(e) It would also be feasible for the cement producers to punish deviations in the cement market through targeted reductions in the price of RMX sold by their integrated RMX businesses.

6.184 For these reasons, we considered that coordination among the UK cement producers would be internally sustainable to some extent before the proposed JV.

Condition 3: external sustainability

6.185 Coordination will be sustainable only if the outside constraints on the firms involved in coordination are relatively limited. It is not necessary for all firms in the market to be involved in coordination, but those firms which coordinate need to be able collectively to exercise a degree of market power.[181]

[181]The Guidelines, paragraph 5.5.17.

6.186 We considered the following external factors which might undermine coordination:

(a) the existence of a competitive fringe;

(b) entry into the production of cement in the UK;

(c) any countervailing buyer power; and

(d) the existence of a current UK cement supplier with different ability and/or incentives in relation to coordination.

The competitive fringe

6.187 Any sales of cement in the UK not made by Lafarge, Tarmac, Hanson and Cemex are of cement which is produced abroad and imported into the UK.

6.188 Table 5 above set out the share of Great Britain sales of bulk cement of each of the four UK cement producers, and total share of sales of imports of bulk cement in Great Britain.

6.189 Collectively, the four UK cement producers accounted for about [✂] per cent of all bulk cement sales in Great Britain in 2010. This strongly suggests that they will be able to exercise a degree of market power collectively.

6.190 Our analysis of the constraint from imports is set out in Appendix Q. The evidence we reviewed showed that imports of cement into the UK were somewhat of a constraint in Great Britain and that [✂]. There is evidence of spare capacity for imports, both at terminals and more generally, because of the existence of considerable spare capacity for production of cement in mainland Europe.

6.191 There is also evidence that independent importers (ie non-majors) have increased their share of Great Britain cement sales (from [✂] per cent of all cement sales in 2006 to [✂] per cent in 2010) and of Great Britain bulk cement sales (from [✂] per cent in 2008 to [✂] per cent in 2009 and 2010). This is also found in our analysis of switching data, in that importers have tended to gain some volumes from the majors, and that gains and losses to importers were larger than we would expect from diversion ratios. Also, although there is some evidence that some independent importers have small catchment areas (less than 40 miles), evidence provided by Lafarge and Tarmac suggests that many cement customers are within 80 miles of an import terminal, and therefore that many cement customers could potentially purchase imported cement.[182]

6.192 However, there is also evidence that the constraint from imports is not sufficient to prevent the UK majors exercising a degree of collective market power:

(a) Despite the increase in the market share of imports between 2006 and 2009, and particularly the increase from [✂] per cent of bulk cement sales in Great Britain in 2008 to [✂] per cent in 2009, we did not find evidence that the rise in import share had a noticeable impact on prices charged by UK cement producers. We

[182] The main parties told us that our assessment of imports was at odds with the EC's consideration of the UK market in its review of Heidelberg Cement/Hanson, where it considered that 'any attempt to coordinate may be destabilised by the increasing constraint of imports, either by other competitors or by some customers'. However, we noted that this decision dated back to 2007 and that the EC only stated that attempts to coordinate *may* be destabilized. On the basis of our analysis of the evidence on the Great Britain market and imports, we considered that this would not be the case in the context of this particular inquiry.

found that both the average variable margins and the average cement prices of Lafarge and Tarmac had in fact increased between 2008 and 2009.[183]

(b) The results from our PCA suggested that the presence of an independent import terminal was not a strong constraint on Lafarge's cement prices, and that the significance of any effect reduced if we did not include Aggregate Industries as an independent importer.[184]

(c) The estimates we obtained from independent importers showed that the total costs of delivering cement to Great Britain customers were substantially higher for importers than for UK cement producers, because importers incurred additional transport costs for shipment.

(d) The fact that UK producers have a substantial cost advantage over importers on a marginal basis (and have excess capacity) is likely to limit the extent to which importers can constrain Great Britain cement prices. Given the lack of transparency in prices of cement, UK producers would be able to undercut importers profitably. Importers can anticipate that UK producers are able to undercut them, and therefore may find it in their interest to behave as price followers.

(e) Imports also suffer from exchange rate risks. The strength of the constraint from imports is therefore subject to variation, depending on the £/€ exchange rate as well as on total demand in mainland Europe. At the moment, total demand is low, which has resulted in spare capacity, but in the longer term excess capacity in Europe may reduce (eg through rationalization of capacity) and/or exchange rates may move against the pound which could result in a reduction in imports.[185]

Entry into the production of cement in the UK

6.193 Our analysis of entry into the production of cement in the UK is presented in Appendix S. All the evidence we received from the main parties and third parties indicated that there were high barriers to entry into cement production.[186]

Countervailing buyer power

6.194 We did not receive any submissions on the existence of buyer power in relation to bulk cement.

6.195 Aggregate Industries is one of the major construction material producers in the UK. However, as set out in paragraph 2.26, it does not produce cement in the UK. It is therefore a very large buyer of cement and it buys both domestically-produced and imported cement.[187] It is possible that Aggregate Industries could threaten to

---

[183] Cemex considered this argument to be weak. According to Cemex, this argument neglected the possibility that, absent imports, prices and/or margins might have increased by more. However, our argument is that the growth of imports (and the threat of expansion by importers) is not sufficient to disrupt coordination.
[184] We did not include Aggregate Industries as an independent importer because, as set out in paragraph 6.195, although it imports cement, [✂]. Further, as set out in paragraph 2.25, it is owned by Holcim Limited, a large producer of cement in Europe and has extensive aggregates and RMX operations—and relationships with the other majors—in the UK.
[185] However, we acknowledged that imports had increased in past years despite movements in exchange rates.
[186] Cemex noted that this analysis did not suggest that there were also high barriers to expansion. Cemex noted that independent cement suppliers had been able to gain significant market shares in recent years. We acknowledged the growth in importers' share (see paragraph 6.191) and the spare capacity for imports (see paragraph 6.190). We explained why the constraint from imports (even with the existing spare capacity) was not sufficient to prevent the UK majors from exercising a degree of market power in paragraph 6.192. For the same reasons, we considered that expansion by importers was unlikely to undermine coordination in the bulk cement market.
[187] [✂]

increase its imports if prices for UK-produced cement were too high. However, it is also possible that the UK cement producers could use strategies to prevent Aggregate Industries from increasing its imports (eg by keeping prices of cement to Aggregate Industries relatively low). [✂], which indicated that, even if it had some bargaining power in relation to cement purchasing due to its large size, such bargaining power would not protect independent customers from price increases.

Existence of a cement supplier with different ability or incentives in relation to coordination

6.196 The Guidelines state that, in assessing whether coordination would be externally sustainable, the CC may consider whether there is a 'maverick'. Coordination will be harder to sustain where there is a firm with substantially different incentives to coordinate than its rivals, and with the capacity to take significant share from any group of firms that tried to coordinate without its participation.[188]

6.197 We considered whether Tarmac might have different incentives to coordinate from Lafarge, Hanson and Cemex, as evidenced in part by its past behaviour:

(a) As noted in paragraph 6.166, Tarmac has been operating at much higher capacity utilization rates than the other three UK cement producers in the past ten years. It reached full capacity in 2007 (and was very near to full capacity in 2005 and 2006).

(b) Anglo American told us that [✂]. This means that Tarmac has been selling its whole production capacity (internally via its own RMX operations as well as via independent RMX operators) at the market price. This suggested to us that Tarmac, unlike Cemex, Hanson and Lafarge, had chosen not to reduce output to maintain the market price.

(c) Tarmac has been historically strong in RMX production and in the last decade has increasingly integrated backward into cement. As set out in paragraph 6.111, Tarmac invested in a new cement plant at Tunstead in 2004 (increasing capacity from [✂] to [✂]), and then increased capacity at Tunstead by a further [✂] in 2008. As set out in paragraph 4.5, Tarmac also received planning permission in January 2011 to add a second kiln to its cement plant at Tunstead (although we accept that, [✂] in current market conditions Tarmac would be unlikely to expand its capacity in the near future in the absence of the proposed JV). For many recent years, Tarmac has operated its plant at, or very close to, full capacity (see Appendix K).

(d) We found that, prior to the proposed JV, Tarmac may have not had strong incentives to monitor customer wins and losses (see Appendix N).

6.198 There is also evidence in the internal documents of the other UK cement producers that they perceived Tarmac as behaving in a different way from other market participants:

(a) Lafarge's Cement Strategic Review of 2009 states: [✂].

(b) Cemex's UK business plan for 2010 states: [✂].

(c) Tarmac wrote a letter to Lafarge in 2008 [✂].

---

[188] The Guidelines, paragraph 5.5.18.

6.199 On the basis of the evidence set out in paragraphs 6.197 and 6.198, we found that it was likely that *(a)* Tarmac did not, at present, have the same incentives to coordinate as the other UK cement producers, and *(b)* if there were a degree of pre-existing coordination, Tarmac was likely to be part of a competitive fringe. However, as set out in paragraph 6.166, Tarmac currently operates at, or close to, full capacity, suggesting that it cannot expand sales further in the short term and therefore that it would not at present be able to further undermine any coordinated outcome (although we noted that, in the longer term, Tarmac could use its existing planning permission to increase the capacity of its Tunstead cement plant).

6.200 Tarmac would benefit from any coordination that exists because it would be able to produce at capacity, whilst selling its output at prices arising from any such coordination (which would be higher than those that would prevail in a competitive market).

Conclusions on Condition 3: external sustainability

6.201 On the basis of paragraphs 6.185 to 6. 200, we considered that coordination would be externally sustainable to some extent before the proposed JV.

Conclusions on the susceptibility of the market to coordination before the proposed JV

6.202 On the basis of paragraphs 6.155, 6.184 and 6.201, we found that each of the three conditions necessary for coordination to emerge (as set out in the Guidelines) was satisfied to some extent before the proposed JV. Taken together with the evidence on market outcomes (see paragraphs 6.108 to 6.132) this indicated that the market was already susceptible to coordination before the proposed JV, and that any coordination was most likely to operate in the manner set out in paragraph 6.133. We now assess the effect of the proposed JV on the extent to which these three conditions are satisfied.

The effect of the proposed JV on the three conditions for coordination

Framework for our assessment

6.203 We examined the effect of the proposed JV on the likelihood and effectiveness of coordination by assessing its effect on the extent to which the three conditions for coordination set out in paragraph 6.104 were satisfied. Although we looked at the impact of the proposed JV on each of the conditions, we noted that it was not necessary that the proposed JV would increase the extent to which each condition was satisfied in order to reach an SLC finding on the basis of coordinated effects. Our assessment was necessarily forward looking—we used the evidence and our analysis on the current working of the market as starting points and then considered how the incentives and abilities of market participants to coordinate would change as a result of the proposed JV.

6.204 The evidence we reviewed indicated that there were aspects of the market that were consistent with a degree of pre-existing coordination (see paragraph 6.132). Where the effect of the proposed JV on competition would differ depending on whether or not there was pre-existing coordination, we looked at both cases.

6.205 We noted that, following the proposed JV, there would be:

(a) increased concentration in UK cement production;

(b) increased consolidation in RMX production at a UK level; and

(c) a more balanced position in terms of the degree of vertical integration between the JV entity, Hanson and Cemex (compared with the present position of Lafarge in which it does not control as large a RMX business as Hanson and Cemex).[189]

6.206 The market structure in cement and RMX following the proposed JV is summarized in Tables 9 and 10.

TABLE 9 **Balance of purchases and sales of cement, and use/production proportions (per cent), before and after the proposed JV, all majors (Great Britain)**

	2008	*2009*	*2010*
Volumes produced (tonnes)			
Lafarge	[✂]	[✂]	[✂]
Hanson	[✂]	[✂]	[✂]
Tarmac (bulk only)	[✂]	[✂]	[✂]
Cemex	[✂]	[✂]	[✂]
Aggregate Industries*	[✂]	[✂]	[✂]
Volumes used internally (RMX and blocks) (tonnes)			
Lafarge	[✂]	[✂]	[✂]
Hanson	[✂]	[✂]	[✂]
Tarmac	[✂]	[✂]	[✂]
Cemex	[✂]	[✂]	[✂]
Aggregate Industries	[✂]	[✂]	[✂]
Use/production (%)			
Lafarge	[✂]	[✂]	[✂]
Hanson	[✂]	[✂]	[✂]
Tarmac	[✂]	[✂]	[✂]
Cemex	[✂]	[✂]	[✂]
Aggregate Industries†	[✂]	[✂]	[✂]
JV entity	[✂]	[✂]	[✂]

Source: Transaction data from Lafarge, Hanson, Tarmac, Cemex and Aggregate Industries.

*Aggregate Industries does not produce cement in Great Britain. The volumes shown in this table are the volumes it imports into Great Britain.
†For Aggregate Industries, this is the ratio of its use of cement to its imports of cement.

TABLE 10 **Market shares of bulk cement sales in Great Britain and shares of Great Britain RMX sales in 2010**

	Lafarge	*Tarmac*	*JV*	*Hanson*	*Cemex*
Cement	[30–40]	[10–20]	[40–50]	[20–30]	[20–30]
RMX	[0–10]	[10–20]	[20–30]	[10–20]	[10–20]

Source: Bulk cement market shares based on CC calculations; RMX shares at a national level based on transaction data and BDS data.

6.207 We also considered the question of what would be likely to happen to the existing patterns of cross-sales among UK cement producers (as set out in Appendix P) if the proposed JV were to take place. This is because some of the possible effects of the proposed JV on coordination depend on the extent to which the JV entity maintains Tarmac's existing purchases from and Lafarge's existing sales to the remaining UK cement producers.

6.208 As shown in Table 11, at present, Lafarge is a net seller of cement and Tarmac is a net buyer of cement. Lafarge buys very little cement from the other majors [✂].

[189] Given our finding (see paragraph 6.199) that, if there were a degree of pre-existing coordination, Tarmac was likely to be part of a competitive fringe, it will often be correct in our analysis of the effects of the proposed JV on coordination to compare the position of the JV entity with that of Lafarge before the proposed JV.

TABLE 11 **Purchases of cement by UK majors from other UK majors, 2010**

'000 tonnes

	Lafarge	*Hanson*	*Cemex*	*Tarmac*	*Total purchases from other majors*
Tarmac purchases from	[✂]	[✂]	[✂]		[✂]
Lafarge purchases from		[✂]	[✂]	[✂]	[✂]
Cemex purchases from	[✂]	[✂]		[✂]	[✂]
Hanson purchases from	[✂]		[✂]	[✂]	[✂]
Total sales to other majors	[✂]	[✂]	[✂]	[✂]	

Source: Lafarge, Hanson, Cemex and Tarmac.

6.209 The main parties told us that, following the proposed JV, the JV entity would be [✂], of Tarmac's existing external purchases of cement, given Lafarge's existing excess cement capacity, the geographical spread of Lafarge's cement business and the available synergies from internalizing these purchases. In our view, this may be rational to the extent that any of these purchases were 'one-sided' (ie not carried out as part of a swap arrangement, in which neither party had to cover the other party's margin). We recognized that at current prices it would be cheaper for a cement producer to self-supply if it had the capacity to do so, to avoid paying what was likely to be a considerable margin (see paragraph 6.120) to another producer.

6.210 However, we were also told by the main parties that the main reason for the current pattern of cross-sales was to [✂].[190]

6.211 Therefore, we did not consider that the JV entity would necessarily internalize all of Tarmac's current cement purchases from [✂] and [✂] following the JV. Table 12 sets out the cross-sales position following the JV under three scenarios: *(a)* the JV entity internalizes all of Tarmac's current purchases from [✂] and [✂], *(b)* the JV entity maintains Tarmac's current [✂] volume swap arrangement with [✂] and *(c)* the JV maintains Tarmac's current [✂] volume swap arrangement with [✂] and internalizes half of current purchases from [✂] (under the assumption that some of the purchases from [✂] may still be maintained because of logistical efficiencies).

[190] [✂]

TABLE 12 **Cross-sales position after the JV, using different assumptions on internalization of Tarmac's external sales**

'000 tonnes

	JV	*[✂]*	*[✂]*	*Total purchases from other majors*
Assumption (a): the JV entity internalizes all Tarmac purchases from [✂] and [✂]				
JV purchases from		[✂]	[✂]	[✂]
[✂] purchases from	[✂]		[✂]	[✂]
[✂] purchases from	[✂]	[✂]		[✂]
Assumption (b): the JV entity maintains Tarmac's current [✂] volume swap arrangement with [✂], and internalizes Tarmac's purchases from [✂]				
JV purchases from		[✂]	[✂]	[✂]
[✂] purchases from	[✂]		[✂]	[✂]
[✂] purchases from	[✂]	[✂]		[✂]
Assumption (c): the JV entity maintains Tarmac's current [✂] volume swap arrangement with [✂] and internalizes half of Tarmac's current purchases from [✂]				
JV purchases from		[✂]	[✂]	[✂]
[✂] purchases from	[✂]		[✂]	[✂]
[✂] purchases from	[✂]	[✂]		[✂]

Source: CC analysis of transaction data from Lafarge, Hanson, Cemex and Tarmac.

6.212 One part of our assessment of the effect of the proposed JV on coordination depends on the view we take on the likely extent of the JV entity's cross-sales. There is some uncertainty as to what this would be. We therefore identify in our assessment those effects that appear to enhance the scope for coordination that rely on an assumption that the JV entity would retain most of Tarmac's current external purchases of cement, and take this uncertainty into account when considering the overall effect of the proposed JV.

Effect on Condition 1: ability to reach and monitor coordination

6.213 Following the proposed JV, we considered whether the first condition for coordination (the ability to reach and monitor coordination) would be satisfied to a greater extent.

6.214 We considered ways in which it might be easier for any group of coordinating firms to reach and monitor coordination following the proposed JV. The ability to reach a common understanding on coordination (which would be most relevant in the absence of pre-existing coordination) requires that firms come to an understanding over time and via their market interactions that they would be better off by coordinating, that they would be able to coordinate and what the system for coordination should be. If the proposed JV made it more likely that UK cement producers could reach a common understanding on the terms of coordination, or that they could do so more quickly, the proposed JV would increase the extent to which Condition 1 was satisfied.

6.215 We examined whether the proposed JV would strengthen both the ability to reach and the ability to monitor coordination because:

(a) there would be fewer cement producers; and

(b) there would be increased information available to the JV compared with Lafarge's current position.

- *Number of producers*

6.216 As a result of the proposed JV, the number of cement producers would decline from four to three and the number of major RMX suppliers would decline from five to four.[191]

6.217 We considered that, if there were no pre-existing coordination, the reduction in the number of domestic cement producers from four to three would be likely to make it easier to reach a common understanding on the terms of coordination (or to reach such an understanding more quickly). There are a number of ways in which this could happen. For example, any act of aggressive competition by one producer would affect the remaining two competitors more strongly (in terms of loss of cement or RMX share or customers) than the previous three competitors. Following the proposed JV, cement producers would therefore be likely to reach an understanding of the benefits they could achieve from coordination more quickly.

6.218 If there were already a degree of pre-existing coordination and Tarmac were not already a member of the coordinating group, the JV would not substantially alter the ability of the members of the coordinating group to reach a coordinated outcome. However, the coordinating group would be better able to monitor coordination, as it would be more able to spot deviations or to target punishment with fewer alternative producers in the market. Following the JV, monitoring would be likely to be easier and any inferences drawn from observing a reduction in sales would be more precise (eg distinguishing whether it was due to a deviation or a change in demand for cement).[192] This is because, before the JV, Tarmac's independence and its incentive and ability to continue to expand output still introduces some additional uncertainty into the market which would be removed as a result of the JV.

- *Increased market information available to the JV entity*

6.219 We considered that, following the proposed JV, the JV entity might have access to more information on its cement competitors than Lafarge at present. The main reason why this would be the case is that the JV entity's increased vertical integration, which would result from combining Tarmac's strong position in RMX plants with Lafarge's large cement production, would allow more information on the RMX market to flow to the JV entity than Lafarge has access to at present. This would provide the JV entity with a better understanding (in terms of overall information and its geographic distribution) of the RMX market (as well as there being one fewer competitor in this market) and enhance its ability to spot deviations in cement purchases. RMX plants would provide better local knowledge to spot deviation via better knowledge of the local market conditions for cement. For example, prior to the proposed JV, in areas where it does not have RMX plants Lafarge may find it difficult to distinguish when its sales are affected by an overall decline in demand from when they have declined because of deviations. We noted that this effect of the proposed JV would be a consequence of the combination of Tarmac and Lafarge's RMX businesses and would arise even without the combination of their cement operations—and irrespective of whether or not there was a degree of pre-existing coordination. This is because the increased market information available to the JV entity would increase its ability to monitor coordination and it could, therefore, make coordination more

[191] If there was some degree of pre-existing coordination, we considered that this would be likely to involve Lafarge, Cemex and Hanson, but not Tarmac. As a result, following the JV the number of coordinating producers would not change, although they would collectively hold a greater market share.
[192] Any apparent deviation from coordination could only come from the two other remaining producers (rather than the three other producers as previously). This would make monitoring easier.

likely, if there were no pre-existing coordination, or make it more stable, if there were a degree of pre-existing coordination.

6.220 The main parties argued that the addition of RMX operations would not increase transparency for the JV entity, compared with Lafarge's existing RMX and cement network:

- The main parties argued that [✂], and any increment arising from the JV would not materially alter this. [✂]

- The main parties argued that monitoring through the additional RMX plants gained as a result of the proposed JV would be likely to provide at best only limited transparency since changes in RMX sales volumes were driven by a large number of factors other than the price of bulk cement. According to the main parties, aggregates, for example, accounted for a greater share of costs in RMX than cement did. We agreed that any definitive monitoring of RMX sales might be difficult. However, the basis of our concern was not that the increased presence of the JV entity in RMX would increase the JV entity's ability to monitor RMX sales. Rather, our view was that it would provide additional information on cement sales, in particular enhancing the JV entity's ability to distinguish between market changes and deviations.

- The main parties told us that neither Lafarge nor Tarmac used detailed market information from their in-house RMX operations for the purpose of monitoring cement supplies to RMX producers.[193] We noted that, although the monitoring mechanisms that we described in Appendix N focused on external bulk cement sales and Great Britain shares of production, there could also currently be informal mechanisms for passing on additional information from local RMX markets. We also noted that the fact that Lafarge might currently make only limited use of any information that could be collected via its own RMX plants might reflect the fact that its RMX network was the smallest among the domestic cement producers. We considered that, following the proposed JV, the JV entity would be likely to have stronger incentives to use the incremental information its RMX network would be able to provide.

- The main parties stated that [✂] per cent of bulk cement sales (and [✂] per cent of bulk external sales) were made to producers of concrete products and additional RMX plants would not provide extra information on competitive behaviour with respect to sales to those customers. We agreed that RMX plants would not provide information related to cement that was used for concrete products.

6.221 Overall we believed that the increased presence of the JV entity in RMX would be likely to provide it with additional and better information about cement sales (in terms of size, geographic spread and quality) than that currently available to Lafarge. We considered that the nature of the information that additional RMX plants would provide was such that the JV entity, by owning an additional RMX plant, would:

(a) gain general information on the local area—ie the plant could allow the JV entity to gather some general local market knowledge and information (eg on local reductions in demand) via informal local contacts with RMX purchasers rather than through direct observation of competitors' sales volumes and prices. This

[193] The main parties also stated that Lafarge win/loss data provided to us was based entirely on Lafarge Cement UK activities and did not make use, to any material degree, of information gathered by Lafarge Aggregates Limited's RMX sites on local market conditions in areas where Lafarge Cement UK supplied cement.

would in particular allow market-wide changes more accurately to be distinguished from deviation;[194] and/or

(b) have one fewer cement buyer to monitor (in terms of finding out who may be responsible if the JV entity loses volumes) in order to spot deviations in cement sales in each local area. The RMX plant would change from being, in some cases, a customer that could potentially switch suppliers—and to whom better terms could potentially be offered—to being a vertically integrated retail outlet for the JV entity's cement.

- *Conclusions on the effect of the proposed JV on Condition 1*

6.222 On the basis of paragraphs 6.213 to 6.221, we found that the proposed JV would increase the ability of UK cement producers to reach and monitor coordination in the bulk cement market.

Effect on Condition 2: internal sustainability

6.223 In assessing the impact of the proposed JV on internal sustainability we examined its likely effects on:

(a) the incentives to coordinate, ie the impact on the incentives of each individual producer to deviate from coordination. In this context, we looked at the effect of changes in the number of producers, changes in firms' structures (in terms of their costs and the degree of vertical integration); and changes in the pattern of cross-sales; and

(b) the ability of each cement producer to punish any deviation from coordination by others.

- *Fewer producers*

6.224 We noted that, following the proposed JV, the cement and RMX output of Tarmac would be added to that of Lafarge. As set out in paragraph 6.133, if there were some degree of pre-existing coordination, we considered it likely that Tarmac was not part of the coordinating group, whereas Lafarge was likely to be. The JV entity's absolute profits from coordination in cement (from both internal and external sales) would be larger than those of Lafarge today, reducing its incentives to deviate compared with Lafarge before the proposed JV.[195] The JV entity would have reduced incentives to deviate because, as a larger producer, any deviation by the JV entity would have a greater impact on the market and be more likely to provoke punishment by the other members of the coordinating group. Furthermore, in the medium term, following the proposed JV, any additional increase in cement sales in Great Britain (eg if demand recovers) would lead to larger profits for the coordinating group which would have

[194] Lafarge currently sells cement in a number of areas of the UK where it does not have RMX operations. A wider RMX network will particularly improve the information available to the JV entity in such areas compared with that available to Lafarge.
[195] The main parties argued that if there were pre-existing coordination, because the proposed JV would not alter the number of firms in the coordinating group, a larger share of profits for the JV entity would entail a smaller share for Cemex and Hanson. However, in assessing the incentives of the JV entity, its share of profits within the coordinating group is not key—rather, what is important is that it would have a larger output and larger profits (in absolute terms) following the JV and its incentives to deviate would accordingly be reduced. The profits of the other members of the coordinating group would not fall.

weaker incentives to deviate to capture additional sales.[196] This would contribute to making any pre-existing coordination more stable.

6.225 If there were no pre-existing coordination, and in the event that agreement on the terms of coordination could be reached,[197] such coordination would be more stable for the reasons mentioned in the preceding paragraph (namely that the JV entity would have stronger incentives to coordinate than Lafarge did before the JV,[198] while Hanson's and Cemex's incentives in this respect would be unchanged). This would contribute to making coordination more likely.

- *Structural similarities—costs*

6.226 As set out in Appendix L, in recent years and in terms of variable production costs, Lafarge's cement plants overall have been among the highest-cost plants in the UK while Tarmac has been the lowest-cost producer based on the audited data to which we had access. Following the proposed JV, the level of the JV entity's average variable production costs will have greater similarities to those of Hanson and Cemex than either Tarmac or Lafarge's costs have at present.

6.227 The greater similarities in costs between UK cement producers as a result of the proposed JV could in principle enhance the internal sustainability of coordination. However, the audited data and information we had on the costs of each cement plant in Great Britain was such that we were not able to establish whether such changes in average variable production costs would be sufficiently material to have this effect.

- *Structural similarities—vertical integration*

6.228 The proposed JV would not reduce the size of the independent RMX sector. However, it would change the positions of the cement producers in the industry in terms of vertical integration (see Table 9). Lafarge is currently the least vertically integrated cement producer as it has a relatively more modest position in RMX. The JV entity would have a larger RMX business than Lafarge currently has, and this would make its vertically integrated position closer to that of Hanson and Cemex.[199]

6.229 In this section, we focus on the effect of the JV entity's increased vertical integration (and its increased similarity to Hanson and Cemex in this respect) on the JV entity's ability to punish deviations (either via either lower cement prices or via lower RMX prices). However, we first discuss the effect that the proposed JV would have on the JV entity's incentives to coordinate compared with those of Lafarge currently.

6.230 In relation to incentives to coordinate we noted that the JV entity would have stronger incentives to coordinate than Lafarge, because it would have greater sales and hence greater profits from cement (whether sold externally or used internally in the JV entity's RMX operations) (see paragraph 6.224). We also observed that the JV

---

[196] The larger the share of the market that a producer has, the more likely it would be that any deviation from the coordinated outcome on its part would provoke punishment and so the less likely that producer would be to deviate. The main parties pointed out that demand was not expected to increase substantially in the near future. However, we noted that if it were to increase and there were some degree of pre-existing coordination, following the JV any future increase in sales of UK-produced cement would be shared among three domestic producers within the coordinating group rather than three producers within a coordinating group and one outside.

[197] As discussed in our assessment of Condition 1, the proposed JV is likely to make it easier for a coordinated outcome to be reached.

[198] As set out in the footnote to paragraph 6.205, we found that Tarmac was likely to be part of a competitive fringe, so we considered it appropriate to compare the JV entity's incentives to coordinate with those of Lafarge before the proposed JV.

[199] The main parties noted that efficiency benefits could arise from vertical integration, including the elimination of double marginalization, which would put downward pressure on prices. Our view as to the likelihood of any such efficiency benefits increasing the JV entity's competitiveness are set out in paragraph 6.275.

entity would have a similar level of external cement sales to Lafarge in absolute terms (since Tarmac made only limited external sales of cement), while its internal sales would be considerably greater. Therefore we noted that the JV entity's stronger incentives to coordinate would be largely due to its increased sales of cement via RMX.

6.231 We then turned to the effect of the proposed JV on the JV entity's ability to punish deviations. The increased similarity in the extent of vertical integration of the JV entity, Cemex and Hanson as a result of the proposed JV would more closely align their abilities to punish deviation from any coordinated outcome. This is because the JV would be more vertically integrated than Lafarge is currently. This effect is explained in the following paragraphs.

6.232 Members of any coordinating group could choose among the following tools for punishing deviation: *(a)* targeted reductions in the price of cement; *(b)* targeted reductions in the price of RMX by their in-house RMX operations; and *(c)* any combination of *(a)* and *(b)*.

6.233 In relation to punishment by means of reductions in the price of cement to external customers, the increased vertical integration of the JV entity, compared with that of Lafarge currently, would have the following effect. Although the JV entity's absolute volume of external cement sales would not change much compared with Lafarge's (see Table 9), the proportion of the JV entity's total sales that would be external would decrease compared with Lafarge, as the JV entity would have much larger internal cement sales. In other words, sales (and profits) from external cement sales would be proportionally less important for the JV entity than for Lafarge. In this regard, we noted that, if the JV entity punished a deviation and this led to stronger competition in external sales of cement, the JV entity could be less affected than Lafarge would be currently because of the JV entity's greater reliance on internal sales.[200]

6.234 At the same time, the fact that the JV entity would have a stronger presence in local RMX markets than Lafarge would mean that a reduction in cement prices to external RMX producers could also result in a larger loss of sales and profits in the JV entity's own RMX activities than Lafarge would experience currently, an effect noted by the main parties. This would tend to reduce the JV's ability to punish via lower cement prices compared with Lafarge.[201] We recognized that this effect could be limited, first, because a reduction in the price of cement to external RMX producers might not be fully passed through into RMX prices, and, second, because the JV entity, like Lafarge currently, could target any reduction in prices to independent RMX producers in such a way as to minimize the effect on its own RMX operations (see paragraphs 6.171 to 6.174).

6.235 In relation to punishment by means of reductions in the price of RMX, if there were a degree of pre-existing coordination this punishment mechanism would currently be unlikely to be as effective for Lafarge as it is for Hanson and Cemex because Lafarge has many fewer RMX plants, limiting *(a)* the choices Lafarge has if it decides to

---

[200] The latter requires that lower cement prices to some independent RMX customers do not always feed into lower prices for cement for the whole RMX market (and, hence, also reductions in the downstream price of internal sales). In order for that to happen there would need to be some differentiation downstream. RMX is a homogeneous product. However, given that RMX markets are local, there is an element of geographical differentiation which could ensure that lower cement prices to independent RMX providers may not fully affect (via lower prices for RMX) internal cement sales. Furthermore, we consider that punishment can be targeted by reducing prices to selected customers (see paragraphs 6.171 to 6.174).

[201] We acknowledged that, on the basis of the same reasoning, the JV entity would have a stronger incentive to deviate in relation to its cement sales than Lafarge did currently, as the JV entity would be less reliant on external cement sales (in proportion to its internal sales).

target lower RMX prices at specific locations, and *(b)* the choices available to Lafarge if it wishes to punish on a large scale in RMX.[202] Following the JV, the JV entity would have a similar set of punishment tools with a similar degree of effectiveness as those available to Hanson and Cemex (and these would be more effective than the tools currently available to Lafarge). The JV entity would also have a similar ability to target punishment to that of Hanson and Cemex.

6.236 As a result of the increased similarity in the extent of vertical integration among the remaining cement producers following the JV, each coordinating firm would have a better understanding of the abilities and incentives of each of the other coordinating firms (in relation to both deviations in cement and punishment via lower cement or RMX prices) and would be better able to take these expectations into account in its own behaviour. We noted that this effect of the proposed JV was a consequence of the combination of Tarmac and Lafarge's RMX businesses and would arise even without the combination of their cement operations.

6.237 The main parties made a number of arguments in relation to the effect of the proposed JV on the available punishment mechanisms.[203] In particular, in relation to punishment by means of reductions in the price of RMX:

(a) The main parties argued that coordination that relied on reaching and monitoring the terms of coordination at the RMX level would be undermined by the additional complexity involved, the lack of transparency in the RMX market, and also by the strength of Aggregate Industries and independent producers in RMX. However, we considered that any coordination (if it existed pre-JV or were to arise following the JV) would be on the basis of total shares of cement production, rather than on the basis of RMX prices or production. An ability to punish deviations using RMX does not imply that a coordinated outcome must be reached and monitored in the RMX market. The JV would align the ability of the JV entity, Cemex and Hanson to punish deviations using RMX, compared with the pre-JV situation.

(b) The main parties argued that any punishment via lower RMX prices was highly speculative and complex since it would need to cover hundreds of local RMX markets.[204] We noted that punishment via lower RMX prices need not cover all—or even the majority—of local RMX markets to be effective. Rather it could be targeted precisely on those local markets where it would have the most impact.

(c) The main parties argued that if the JV entity wished to punish deviations via lower RMX prices, it would find it difficult or unattractive for the following main reasons:

(i) the JV entity (and/or any other member of the coordinating group) would have to identify an area where both it and the deviator had RMX sites;

(ii) if, in order to harm the deviator, the JV entity engaged in punishment via RMX by bidding very aggressively for any available job hoping this would harm any nearby site of the deviator that would also bid for the job (given that RMX is not sold under long-term contracts), not only would the JV entity

---

[202] The choice is limited because Lafarge has a smaller pool of RMX plants to choose from than Cemex or Hanson.
[203] The main parties argued that, because the proposed JV would have no impact on the degree of vertical integration of Hanson or Cemex, we had implicitly assumed that Lafarge was the destabilising firm that prevented tacit coordination arising in the market at present. However, we did not conclude as to whether there was a degree of pre-existing coordination or not. Our view is that, following the JV (and if there were no pre-existing coordination), it would be more likely that the JV entity would take part in coordination (and if coordination already exists, it would be likely to become more stable) because the JV entity's incentives would be more closely aligned with those of Cemex and Hanson than Lafarge's at present.
[204] The main parties added that we had not considered how the coordinating group would reach an understanding on the punishment mechanism. In their view, punishment clearly became more complex if it relied on lowering prices in one or more of the approximately 270 local RMX markets where the JV would operate.

substantially harm its own profitability but other members of any coordinating group would also be punished despite not having deviated, potentially destabilizing any coordination; and

(iii) once the JV entity had engaged in punishment, it would be difficult to revert back to the pre-deviation level of prices, for example because RMX competitors that were not part of the coordinating group (but that had been affected by the price war in RMX) would continue to price at lower levels.[205]

We considered that, following the proposed JV, if the JV entity intended to punish effectively via lower RMX prices, it would have to identify local markets where it could affect the cement or RMX sales of the deviator. These would be areas where the deviator either had material RMX sales or sold material quantities of cement to independent RMX producers (which would reduce their cement purchases from the deviator if demand for their RMX declined). We also considered that the risk of punishing other members of the coordinating group who had not deviated was limited as we would expect that punishment would be targeted at areas where this risk was minimized. In relation to the ability to return to pre-punishment level of prices, the punisher could signal the end of the punishment phase in many different ways either related to that particular RMX local market (eg it could stop competing aggressively for all jobs) or elsewhere (eg in the external cement market or by purchasing some quantities of cement from the former deviator).

(d) The main parties argued that any punishment via lower RMX prices would be costly to the punisher and, hence, make punishment unattractive. They argued that a deviator's customers could not be targeted due to the transitory nature of RMX contracts (ie short-term 'jobs') and the uncertainty under which suppliers (including suppliers outside the putative coordinating group) bid for any given contract. However, we noted that RMX markets were local. If a member of any coordinating group competed more aggressively in a particular local area, the other local RMX producers would be affected. The careful choice of such areas would determine who was affected the most by targeted punishment. The main parties also stated that it was unclear whether the JV entity could effectively punish a deviator by lowering its RMX prices because, to respond to a given deviation in cement, any RMX price reduction would have to apply to about three times the volume of RMX (because one tonne of cement is needed to produce three tonnes of RMX). According to the main parties, the volumes of RMX involved would quickly become very large and punishment would need to be widespread. However, in our view, the JV entity's larger RMX business compared with that of Lafarge currently would make such widespread punishment (if it were indeed needed) more feasible. Further, as there are some profit margins in RMX (in addition to the underlying margin on the internal sale of cement), punishment in RMX that has the same impact on profits as a deviation in cement would need to cover less than three times the cement volumes affected.

(e) The main parties argued that in what they considered to be the unlikely event that targeted RMX punishment could be achieved, it would also provide an additional mechanism by which cheating on any coordinated terms could occur. We noted that the JV entity would sell more cement in total (ie internally and externally) than Lafarge does currently. This would make the JV entity more reluctant to deviate because it would have more to lose and less to gain from deviation than a

[205] The main parties also argued that, as RMX prices were not transparent, one member of the coordinating group might think it had been punished while in reality it had lost customers to independents. However, in our view, this argument related to the ability to monitor RMX local markets rather than the ability to punish in those markets.

smaller producer. Further, the monitoring mechanism we identified in paragraphs 6.149 to 6.154 to allow deviations from the coordinated outcome to be detected would remain viable following the proposed JV,[206] regardless of the increased extent of the JV entity's vertical integration into RMX.

6.238 In summary, by increasing the similarities in the extent of vertical integration of the JV entity and Cemex and Hanson, the proposed JV would grant the JV entity greater flexibility and options in its punishment actions than Lafarge has at present. We also found that the proposed JV would make the proposed JV entity, Cemex and Hanson's abilities to punish and incentives to coordinate more aligned. This would be likely to make any coordination more stable (if there were a degree of pre-existing coordination) or more likely to emerge following the proposed JV (if there were no pre-existing coordination).

6.239 The scope for increased similarity in vertical integration and its 'stabilizing' impact on the market was noted in several internal documents from the majors. Lafarge, in its strategic review of cement for 2010, commented that: '[✂]'.[207]

6.240 Similar comments are noted in Lafarge's 'Cement strategic review 2009': '[✂]'.

6.241 In its UK strategic plan 2011 to 2015, Hanson comments that: [✂].

6.242 Cemex, in its UK Business Plan 2011–2015, May 2011, [✂].[208]

- *Increased ability to signal before more costly punishing*

6.243 If the JV entity were to have greater cross-sales with Hanson and Cemex than Lafarge does currently (see paragraph 6.211), then it would have an enhanced ability compared with Lafarge to use repatriation as a cheap signal to deviators from the coordinated outcome to cease doing so, short of entering a more costly punishment phase. Hence the proposed JV might result in a lower risk for the cement producers of costly price wars than at present.

6.244 The main parties argued that signalling via repatriation lacked a basis in reality (because the JV might well purchase very little cement externally), and theoretical merit (because the harsher punishment allegedly being signalled was not credible). Further, they told us that it was unclear how it could be a clear and credible signal. Paragraph 6.179 provides some examples of how repatriation could be used as a signalling (and punishment) device. As set out in paragraphs 6.207 to 6.212, we believed that it was possible that the JV entity would have some cross-sales with other majors (even if it did not maintain Tarmac's swap arrangement with Cemex).[209] Whilst we agree that signalling needs to be backed up by a credible punishment mechanism in order to be effective, the punishment mechanism does not have to be the same as the signalling mechanism. Small-scale repatriation could be used to signal the possibility of punishment via targeted cuts in the price of cement or RMX.

---

[206] As set out in paragraph 6.221, we also considered that the JV entity would have better information and an increased ability to detect deviations compared with Lafarge because of its additional RMX plants.
[207] [✂] We considered this to be consistent with our view that the proposed JV would increase the similarities between the JV entity, Cemex and Hanson in terms of the extent of their vertical integration (compared with Lafarge, Cemex and Hanson at present).
[208] [✂]
[209] We considered that this swap arrangement did not preclude Tarmac and Cemex changing the amount of cement they bought and sold to each other under the arrangement, and therefore that such volumes could be used for signalling purposes.

- *Increased effectiveness of punishment mechanisms*

6.245 The ability of the JV entity to spot and better punish deviations would increase following the proposed JV, compared with Lafarge at present.

6.246 As set out in paragraphs 6.171 to 6.174, one of the punishment mechanisms currently available in the market is to engage in targeted punishment, for example by lowering cement prices to important customers of the other UK producers. As set out in paragraphs 6.219 to 6.221, the merging of Lafarge's and Tarmac's RMX businesses would increase the information the JV entity has on local RMX markets compared with Lafarge at present. This would increase the JV entity's ability not just to spot deviations, but to target punishment where it would be most effective against competitors and less costly for the JV entity.

6.247 We also considered the effectiveness of repatriation as a punishment mechanism (rather than simply a signalling tool) following the proposed JV. If the JV entity maintains, at least in part, more extensive cross-sales with Hanson and Cemex than Lafarge does currently (see paragraph 6.211), then it would be able to punish Cemex and Hanson via repatriation whereas Lafarge and Tarmac cannot currently do so:

(a) Lafarge cannot repatriate because it does not purchase from the other producers at present [✂]; and

(b) Tarmac cannot repatriate because it cannot increase its self-supply without further expanding its capacity, which takes time and resources to do.

6.248 We noted that any increased ability of the JV entity (compared with Lafarge at present) to use repatriation of sales as either a signal or a punishment mechanism would be a consequence of the combination of Tarmac and Lafarge's RMX businesses and would arise even without the combination of their cement operations.

6.249 We noted that, following the proposed JV, if the current pattern of cross-sales did not substantially change, both Hanson and Cemex would be able to respond to repatriations by the JV entity by repatriating cement themselves, given that they would both purchase from the JV entity and have excess capacity. This suggests that repatriation following the JV may not be particularly effective as punishment but, as discussed above, could be a useful signalling mechanism before punishment takes place in the form of lower prices. In any event, other forms of punishment would still be available following the JV, such as targeted reductions in cement prices.

- *Other considerations raised by the main parties*

6.250 The main parties submitted that, following the proposed JV, a number of factors would disrupt any pre-existing coordination, or, if there was no pre-existing coordination, the proposed JV would be likely to make it more difficult to reach and monitor coordination:

(a) According to the main parties, the JV [✂] Lafarge and this would increase asymmetries between the members of any coordinating group. However, we were not able to establish the materiality of any changes in average variable production costs as a result of the proposed JV (see paragraph 6.227).

(b) According to the main parties, relative to Lafarge, the JV would have a larger share of total cement production, requiring realignment of the terms of coordination. The main parties pointed out that we had not identified how such realignment would occur. We considered that, as the increase in the JV entity's share of

supply of cement (compared with Lafarge's share currently) did not affect the absolute level of sales of Hanson and Cemex, there was no reason that a realignment of the terms of coordination would be needed following the JV.

(c) According to the main parties, the roll-out of RMX VAPs[210] by the JV entity would destabilize coordination in two ways: (i) it would reduce the scope for cement cross-sales (since the JV entity would not want to reveal the specifications for the cement required to manufacture its VAPs to an external cement supplier); and (ii) it would increase asymmetries with other cement producers (as Cemex and Hanson had limited involvement in VAPs). However, the main parties told us that the JV entity would make very limited purchases of cement in any event (see paragraph 6.209). Further, differentiation in the RMX market (for example, through the development of VAPs, which continue to require cement as a key input) would not undermine coordination on shares of total production in the bulk cement market.[211]

(d) According to the main parties, asymmetries in a number of other parameters might increase following the proposed JV including, for example: shares of cement and RMX production, presence in concrete products and mortar (where Cemex and Hanson were present but the JV entity would not be) and spare capacity (since the JV entity would internalize volumes currently purchased by Tarmac from the other majors). However, our view (as set out in paragraph 6.133) was that coordination, if it was occurring in the bulk cement market, would be on the basis of shares of total cement production (and not spare capacity). Asymmetries in the degree of vertical integration overall (ie including all internal consumption of cement, whether RMX, concrete products or mortar) and costs are key in this context whereas other asymmetries are less relevant.

- *Conclusions on the effect of the proposed JV on Condition 2*

6.251 On the basis of paragraphs 6.223 to 6.250, we found that the proposed JV would increase the internal sustainability of coordination in the bulk cement market.

Effect on Condition 3: external sustainability

6.252 As set out in paragraph 6.201, we found that any pre-existing coordination in the bulk cement market would not be undermined by factors external to the coordinating group of firms, such as the behaviour of importers, entry into cement production and countervailing buyer power. Given that these factors were external to the coordinating group of firms, we did not consider that there would be any change as a result of the JV in the scope for these factors to undermine coordination. In assessing the effect of the proposed JV on the external sustainability of coordination, we therefore focused on the role of Tarmac in the bulk cement market.

6.253 As set out in paragraph 6.199, we found that it was likely that Tarmac:

(a) did not, at present, have the same incentives to coordinate as the other major UK cement producers;

---

[210] These are innovative RMX products, requiring the use of additives and/or special production processes to develop particular properties for use in specialist applications. Examples include self-compacting RMX, coloured RMX, fast-setting RMX and waterproof RMX.

[211] In addition, whilst it appeared that Lafarge had a strong position in the market in relation to VAPs, its VAP product range overlapped to a certain extent with that of the other UK majors and certain independent RMX producers. We were told that chemical companies developed admixtures (such as plasticizers, waterproofing agents and corrosion inhibitors) which they placed on the general market, and which would enable any RMX producer to develop certain types of VAPs.

(b) was likely (if there were a degree of pre-existing coordination) to be part of a competitive fringe; and

(c) could not expand its sales further in the short term, given that it currently produces at, or close to, full capacity and would therefore not be able to undermine further any possible pre-existing coordination. We noted that, in the longer term, Tarmac could use its existing planning permission to increase the capacity of its Tunstead cement plant.

6.254 Tarmac has to date considerably expanded its capacity on two occasions in the past ten years. Tarmac may therefore have been perceived as a long-term potential threat to any possible coordination, and it is possible that other market participants would, in the interests of maximizing their own profitability, have accommodated Tarmac's increased market share rather than reduce their prices. After the proposed JV, the threat that the JV entity might expand its capacity further would be lower as it would already benefit from Lafarge's excess capacity.

6.255 The main parties argued that [✂]. To the extent that there is any pre-existing coordination, the JV entity's incentives to expand capacity may be reduced compared with Tarmac's today.

6.256 The main parties also argued that the removal of Tarmac as an independent competitor would have a very limited effect on the purchasing options open to independent cement customers and the prices they paid because Tarmac sold only a small amount of its cement externally. However, as set out in paragraph 6.133, we considered that any coordination in the bulk cement market was likely to be on the basis of shares of total production and would result in higher prices for UK cement overall to all end-users of cement (not just for cement sold externally to independent customers). By removing an existing market participant that was part of the competitive fringe and that had a strong incentive to expand its output, the proposed JV would increase the external sustainability of any coordination, which would make departure from any coordination less likely in future, thereby resulting in higher prices on average for all cement customers.

- *Conclusions on the effect of the proposed JV on Condition 3*

6.257 On the basis of paragraphs 6.252 to 6.256, we found that the proposed JV would increase the external sustainability of coordination in the bulk cement market, because it would eliminate an existing market participant with a strong incentive to expand (rather than reduce) its output.[212]

Conclusions on the effect of the proposed JV on coordination

6.258 The evidence on market outcomes that we reviewed indicated that there were shortcomings in the way the bulk cement market functioned which were consistent with a degree of pre-existing tacit coordination. Our finding that the three conditions for coordination are satisfied to some extent before the proposed JV takes place (see paragraph 6.202) is also consistent with a degree of pre-existing coordination.

[212] The main parties argued that we were inconsistent to conclude (in the context of our counterfactual assessment—see paragraph 4.10) that Tarmac's Tunstead cement plant would not be expanded whilst also concluding that Tarmac had a strong incentive to expand its output. However, the counterfactual assessment is near-term and differs from an assessment of longer-term incentives. Tarmac has an incentive to expand its production as it benefits from the prevailing market price without having to restrict its own production. In the longer term therefore, the threat (and perceived threat) of Tarmac expanding its cement production capacity remains.

However, we did not conclude on the existence or otherwise of coordination in the market before the proposed JV because it was not necessary to do so in this case.

6.259 As set out in paragraph 6.205, we noted that the proposed JV would result in significant changes to the structure of the market. In particular, following the proposed JV, there would be:

(a) increased concentration in UK cement production, with a reduction in the number of domestic cement producers from four to three;

(b) increased consolidation in RMX production at a UK level; and

(c) a more balanced position in terms of the degree of vertical integration between the JV entity, Hanson and Cemex (compared with the present position of Lafarge in which it does not control as large a RMX business as Hanson and Cemex).

6.260 As a result of these changes, we found that the proposed JV would result in each of the three conditions for coordination being satisfied to a greater extent than at present in the bulk cement market (see paragraphs 6.222, 6.251 and 6.257). We considered that any coordination in this market would continue to be most likely to operate in the manner set out in paragraph 6.133.

6.261 Some of the ways in which the proposed JV would increase companies' abilities and incentives to coordinate in the bulk cement market would arise from the combination of Tarmac and Lafarge's cement businesses. These are, in summary:

(a) making reaching a common understanding on the terms of coordination easier and/or swifter (if there were no pre-existing coordination), and making monitoring of wins and losses of cement customers and production volumes easier as a result of the reduction in the number of producers whether there was a degree of pre-existing coordination or no pre-existing coordination;

(b) reducing the JV entity's incentives to deviate from the coordinated outcome compared with those of Lafarge since it will have larger overall profits from coordination; and

(c) removing Tarmac as an independent competitor with a strong incentive to produce at capacity and to expand its capacity (and sales) in the future.

6.262 Some of the ways in which the proposed JV would increase companies' abilities and incentives to coordinate in the bulk cement market would arise from the combination of Tarmac and Lafarge's RMX businesses. These effects would arise even if it were not proposed to combine Tarmac and Lafarge's cement businesses, and therefore had additional implications for remedies (see paragraphs 8.66 to 8.67). These effects are, in summary:

(a) allowing more information on the RMX market to flow to the JV entity than Lafarge presently has access to, enhancing the ability to monitor coordination in the bulk cement market (see paragraph 6.219);

(b) creating greater similarities in the vertically integrated structure of the JV entity, Cemex and Hanson compared with Lafarge, Cemex and Hanson at present. This would align both the incentives of the JV entity, Cemex and Hanson to coordinate and their ability to punish deviation from the coordinated outcome, as well as increasing the JV entity's flexibility and options in its punishment actions com-

pared with those currently available to Lafarge. Both these effects would contribute to making coordination more stable (see paragraphs 6.228 to 6.242); and

(c) if the JV entity maintains Tarmac's present cross-sale arrangements for the supply of Tarmac's RMX plants (see paragraph 6.211), this would give the JV entity increased ability (compared with Lafarge at present) to use repatriation of those sales either as a signal to other members of a coordinating group that it has detected deviation or as a punishment mechanism to deter deviation (although the latter is less likely) (see paragraphs 6.243 and 6.244).

6.263 As noted in the previous paragraph, the effects arising from the combination of Tarmac and Lafarge's cement businesses and the effects arising from the combination of their RMX businesses are both largely independent and cumulative.

6.264 Given our finding that the three conditions for coordination would be satisfied to a greater extent as a result of the proposed JV, and taking into account all the evidence, we concluded that the proposed JV would make coordination in the bulk cement market significantly more likely to emerge (if there were no pre-existing coordination) or if there were pre-existing coordination would increase materially its effectiveness and stability. In either case, this would have the effect of making departure from any coordination less likely in future, thereby resulting in average prices being likely to be higher than would otherwise be the case. We therefore concluded that the effects of the changes to the market arising from the proposed JV would be sufficiently large that the proposed JV would be likely to result in an SLC in the supply of bulk cement.

Vertical effects

6.265 We assessed whether the proposed JV would be likely to give rise to vertical effects through full or partial input foreclosure (see paragraph 6.2) of downstream non-integrated rivals. Vertical effects could arise from unilateral market power in an upstream market or coordination in an upstream market.

6.266 Given our findings on the nature of the likely competition problems as a result of the proposed JV in relation to the upstream market of primary aggregates (ie unilateral effects—see paragraph 6.35), and in relation to the upstream market of bulk cement (ie coordinated effects—see paragraph 6.264), there are two relevant vertical theories of harm:

(a) The JV entity may have an increased ability and incentive (compared with Tarmac and Lafarge before the proposed JV) to foreclose the supply of primary aggregates to its downstream RMX and asphalt competitors, with the effect of harming competition in local RMX and asphalt markets.

(b) Any coordinating group of companies in the bulk cement market may have an increased ability and incentive as a result of the proposed JV to foreclose (either partially or in full) the supply of cement to downstream RMX competitors, with the effect of harming competition in local RMX markets.

Primary aggregates into asphalt and/or RMX

6.267 The framework for assessing the likelihood of input foreclosure is to examine:[213]

(a) ability—whether the JV entity would have the ability to harm rivals, for example by reducing supplies of primary aggregates to them, increasing price or by refusing to supply them, thereby raising prices for primary aggregates sold externally (either generally or in certain local areas);

(b) incentive—whether the JV entity would find it profitable to do so; and

(c) effect—whether the effect of foreclosure (either full or partial) by the JV entity would be sufficient to reduce competition downstream to the extent that, in the context of the market in question, it gave rise to an SLC.

6.268 Our vertical effects analysis for primary aggregate supply into asphalt and/or RMX is set out in Appendix R.

6.269 Aggregates are an important input into the production of asphalt and RMX. As set out in paragraph 5.27, we considered that primary aggregates were in a separate market from secondary and recycled aggregates. The JV entity appeared unlikely to have sufficient share of the external supply of primary aggregates (ie non-self-supplied volumes) to non-integrated asphalt and RMX producers in any local area to generate foreclosure concerns as a result of the proposed JV (using the 30 per cent market share threshold cited in the Guidelines[214] as a starting point in our analysis). The JV entity's share of supply (whether the share of external sales only was taken into account, or the share of all sales, internal and external) would be well below this threshold, whether primary aggregates were considered as a whole, or the analysis was conducted separately for crushed rock and sand and gravel. Our analysis therefore indicated that the JV entity would not have the ability to foreclose non-integrated asphalt or RMX producers. Evidence on vertical effects from the main parties' internal documents and from submissions made by third parties was consistent with the results of our analysis.

6.270 As our analysis indicated that the JV entity would not have the ability to foreclose non-integrated asphalt or RMX producers, we did not consider its incentives to foreclose, nor the ability of downstream primary aggregate customers to undermine any attempts at foreclosure.

6.271 We therefore found that the proposed JV would not be likely to result in an SLC as a result of vertical effects in relation to primary aggregate supply into asphalt and/or RMX.

Cement into RMX

6.272 We came to no conclusions as to whether there would be likely to be vertical effects as a result of the proposed JV in relation to cement as an input to RMX. However, we noted that the scale of the RMX divestiture required to remedy the SLC we identified in the bulk cement market (see paragraphs 8.66 to 8.79) limited the extent to which such vertical effects could arise as a result of the proposed JV.

---

[213] The Guidelines, paragraph 5.6.6.
[214] The Guidelines, paragraph 5.3.5. The main parties argued that it was unduly cautious to set the filter for ability to foreclose using a market share threshold of 30 per cent. However, as set out in Appendix R, we only used 30 per cent as an initial filter and the JV entity's share of supply was well below the 30 per cent threshold.

Countervailing factors

6.273 In accordance with the Guidelines, we considered whether the following countervailing factors would prevent or reduce an SLC that might otherwise arise as a result of the proposed JV:

(a) Efficiencies:[215] in particular, whether these would be rivalry-enhancing efficiencies that arose from the proposed JV and that could be expected to offset any increase in price.

(b) Expansion and entry:[216] whether these would be timely, likely and sufficient to prevent any SLC that might otherwise arise.

(c) Buyer power:[217] whether any of the JV entity's customers would have countervailing buyer power, whether any such countervailing buyer power possessed by some customers would be sufficient to protect all customers from the effects of an SLC and what the impact of the proposed JV would be on any existing countervailing buyer power.

Efficiencies

6.274 The main parties said that the proposed JV would lead to efficiencies. In particular, as set out in more detail in Appendix E, the main parties said that there were significant synergy benefits arising from the proposed JV, a considerable proportion of which were procurement synergies and logistics savings, which would result in a reduction in variable costs for the JV entity. The main parties argued that these cost savings were expected to make the JV entity more competitive in each relevant market, including in those markets where we had identified SLCs.

6.275 The main parties provided no convincing evidence that any efficiency savings that arose would be passed on to customers. In this context, Lafarge argued (see paragraph 6.126) that [✂] and Anglo told us that [✂]. If this were the case, we expected that any efficiency savings could be expected to be used to improve returns rather than to be passed on to customers. Further, reductions in variable costs on the scale described by the main parties appeared unlikely to be sufficiently large to offset the SLC we had identified in the bulk cement market.

6.276 In the local primary aggregates, asphalt and RMX markets in which we identified an SLC, we did not receive any evidence regarding how cost savings might specifically enhance rivalry in each of those markets to a degree that would offset the SLC we identified.

Expansion

6.277 In relation to cement, given that we found that coordination would be likely to be internally sustainable after the proposed JV (see paragraph 6.251), we considered that expansion by Cemex and Hanson (which could prevent or reduce the SLC in the bulk cement market) would be unlikely to occur after the proposed JV.[218]

---

[215] The Guidelines, section 5.7.
[216] The Guidelines, section 5.8.
[217] The Guidelines, section 5.9.
[218] The expansion of output discussed here is an increase in production within current capacity limits, and does not refer to an increase in capacity.

6.278 In relation to primary aggregates, asphalt and RMX, there was evidence of over-capacity (see Appendix S). However, whether expansion could offset any SLC that might otherwise arise at the local level as a result of the proposed JV would depend on competitors' ability and incentive *(a)* to expand production in each local market in which an SLC might arise and *(b)* to supply these additional volumes at a price that customers would find attractive compared with the prices offered by the JV entity.

6.279 The main parties provided data that indicated that third parties held considerable spare production capacity for primary aggregates in each of the local markets in which we identified an SLC as a result of the proposed JV.[219] In relation to asphalt and RMX, the main parties noted that they themselves had significant spare capacity, and that their utilization levels were indicative of overcapacity in the relevant markets as a whole. The main parties argued that third parties were likely to have the ability to expand, even in the absence of specific expansion plans, constraining the JV entity within each local market.

6.280 However, our PCA results for some primary aggregate products (see paragraph 6.10) showed statistically significant price effects due to the presence of a Lafarge plant close to a Tarmac plant. The PCA was based on recent market data, collected under conditions where there was also spare third party capacity in the markets concerned. In relation to primary aggregates and RMX, our survey indicated that there would be a limited response by competitors to the proposed JV.[220] In addition, the main parties did not provide any evidence of past expansion or plans to expand in the future in relation to the specific problem areas we identified. Further, even if third parties had the capacity to supply additional volumes in the markets where we identified an SLC, this would not mean it was likely that they would do so (ie whether they would be able to supply additional volumes at attractive prices) to an extent sufficient to offset the reduction in rivalry in each of those markets as a result of the proposed JV.

6.281 We did not find evidence of expansion plans in relation to rail ballast and HPL for FGD that might offset an SLC in those markets.

Entry

6.282 Appendix S contains our analysis of barriers to entry and future entry plans in the relevant markets.

Barriers to entry

6.283 As set out in Appendix S, we found that, for all the relevant markets, substantial excess capacity at a national level would act as a barrier to entry by reducing the incentives for new entry. A new entrant would perceive that its ability to make entry profitable would be reduced if existing market participants could react quickly to its entry by increasing their output.

6.284 In addition, we identified specific barriers to entry into particular relevant markets:

---

[219] The main parties used peak historic outputs from the sites concerned as proxies for the sites' capacities, noting that this approach was likely to understate the maximum capacity of each site.

[220] 0 per cent of aggregate competitors said spontaneously that they would increase their output if the proposed JV took place. 17 per cent of aggregate competitors would increase their output if the JV entity decreased its output. 3 per cent of RMX competitors said spontaneously that they would increase their output if the proposed JV took place. 36 per cent of RMX competitors said that they would increase their output if the JV entity decreased its output.

(a) For cement, the large capital investment required to build a new cement plant means that small-scale entry would not be feasible (ie there are significant economies of scale which would deter small-scale entry).[221] Entry via setting up a grinding station or import terminal would require economic access to a supply of clinker (in the case of a grinding station) or cement (in the case of an import terminal), both of which would either have to be imported or come from a rival UK cement supplier. This would be likely to weaken the business case for entry via either of these routes.[222]

(b) For both primary aggregates and cement, the limited availability of suitable greenfield sites, along with the difficulties and costs in obtaining planning permission, would make any entry slow and expensive.

(c) For aggregates, the supply of raw materials for the production of secondary and recycled aggregates appears likely to be sufficiently limited (because of finite resources) and confined to specific geographic locations to make entry into production of these types of aggregates on a large scale unlikely.

(d) For asphalt, current market conditions (ie both excess capacity and falls in market demand) combined with the initial capital requirements to serve a limited local market, appeared to make entry unlikely.

Future entry plans

6.285 The main parties told us that they were aware of certain plans and proposals for expansion and entry in the relevant markets. We reviewed this evidence (see Appendix S). We found that:

(a) Plans for expansion of existing cement import terminals and additional cement import terminals would be unlikely to offset the SLC we identified in the bulk cement market for the reasons set out in paragraphs 6.192 and 6.284.

(b) The one proposal of which we were aware for new entry into cement production in the UK did not appear to be sufficiently certain or near term to be likely to offset the SLC we identified in the bulk cement market.

Conclusions on entry

6.286 In light of significant barriers to entry into the cement market (see paragraphs 6.283 and 6.284) and the uncertain plans for future entry (see paragraph 6.285), we found that entry into the bulk cement market would be unlikely to offset the SLC we identified in that market.

6.287 For primary aggregates, asphalt and RMX, we did not find evidence of specific entry plans in those local aggregates, asphalt and RMX markets in which we found that the proposed JV would be likely to result in an SLC, nor in the rail ballast or HPL (for FGD) markets. Taken together with barriers to entry listed in paragraphs 6.283 and 6.284, we therefore found that entry would be unlikely to offset the SLCs we identified in those markets.

---

[221] The main parties argued that entry via acquisition of an existing cement works would achieve effective entry at lower fixed capital cost. However, the cost of acquiring an existing cement works would still represent a large capital outlay that would in our view act as a significant barrier to entry via this route as well.

[222] Cemex told us that its Tilbury grinding plant showed that it was feasible for a new competitor to enter the UK market via setting up a grinding station, and noted that, [✂]. However, Cemex, with its global cement production operations, is not in the same position as a new entrant setting up a grinding station without an in-house supply of clinker.

Buyer power

6.288 The evidence we received in relation to buyer power is assessed as part of our assessment of the unilateral effects of the proposed JV in the rail ballast market (see paragraphs 6.51 to 6.55) and as part of our assessment of coordinated effects in the bulk cement market (see paragraphs 6.194 and 6.195). We did not receive any evidence that buyer power would be sufficient to be expected to prevent or reduce the SLCs we identified as a result of the proposed JV.

7. Findings

7.1 For the reasons set out in the paragraphs listed, we concluded that the proposed JV may be expected to result in an SLC leading to prices that would be higher than might otherwise be the case in the following markets:

(a) the market for the supply of bulk cement in the UK (see paragraphs 6.102 to 6.264);

(b) the 19 local markets for the supply of primary aggregates (of all grades) for construction applications listed in Appendix I (see paragraphs 6.6 to 6.35);

(c) the market for the supply of rail ballast in the UK (see paragraphs 6.36 to 6.57);

(d) the market for the supply of HPL in the UK, in relation to HPL supplied for FGD applications (see paragraphs 6.58 to 6.83);

(e) the two local markets for the supply of asphalt listed in Appendix I (see paragraphs 6.84 to 6.91); and

(f) the seven local markets for the supply of RMX listed in Appendix I (see paragraphs 6.92 to 6.101).

8. Remedies

Introduction

8.1 In this section, we consider remedies to the SLC and resultant adverse effects summarized in Section 7.

Framework for consideration of remedies and types of remedy option

8.2 Under section 36 of the Act, the CC needs to decide on three questions concerning remedial action, namely:

(a) should the CC itself take action to remedy, mitigate or prevent the SLC or any adverse effects resulting or expected to result from the SLC?

(b) should the CC recommend the taking of action by others, eg government, regulators and public authorities for the purpose of remedying, mitigating or preventing the SLC or adverse effects resulting or expected to result from the SLC?;[223] and

[223] In this particular inquiry, it has not been necessary to recommend the taking of action by others.

(c) what action should be taken? The CC should state the action that should be taken and what that action is designed to address.

8.3 The Act requires that the CC, when considering possible remedial actions, shall 'in particular, have regard to the need to achieve as comprehensive a solution as is reasonable and practicable to the substantial lessening of competition and any adverse effects resulting from it'.[224] To fulfil this requirement, the CC will seek remedies that are effective in addressing the SLC and its resulting adverse effects and will then select the least costly remedy that it considers to be effective. The CC will also seek to ensure that no remedy is disproportionate to the SLC and its adverse effects. In its consideration of remedies the CC may also have regard, in accordance with the Act,[225] to any RCBs arising from a merger.

8.4 Remedies are conventionally classified as either structural or behavioural. Structural remedies, such as divestiture or prohibition, are generally one-off measures that seek to restore or maintain the competitive structure of the market through a direct change in market structure. Behavioural remedies are measures that are designed to regulate or constrain the behaviour of merger parties with the aim of restoring the conditions of competition that would have been present absent the transaction. Behavioural remedies are generally subject to higher risks than structural remedies and are therefore less likely to be effective and/or proportionate solutions to an SLC in a merger inquiry.[226]

8.5 In our Notice of possible remedies, published on 21 February 2012 (the Remedies Notice) we invited views on three broad categories of structural remedies:

(a) full prohibition;

(b) requiring Anglo-American, Lafarge or both to divest certain operations as a condition for allowing the JV to proceed ('divestiture'); and

(c) prohibition of the JV in relation to some markets, but not in relation to others ('partial prohibition').

8.6 In response to the Remedies Notice and at their response hearing, neither main party expressed any appetite for pursuing a partial prohibition as a remedy. We therefore focused our consideration of possible remedies on full prohibition and divestiture remedies. We tested our views about possible remedies with the main parties and with third parties, including those parties that had been identified by the main parties as potential purchasers of divested operations (see Appendix T).

8.7 The remedies that we consider in this section are intended only to address the SLCs that we expect to result from the proposed JV. Accordingly, we leave the assessment of remedies to address any existing shortcomings in competition in aggregates, cement and RMX markets for the market investigation (referred to the CC by the OFT on 18 January 2012) to consider.

8.8 The remainder of this section is structured as follows:

(a) in paragraphs 8.9 to 8.98 we describe the various possible remedy options that we have considered;

---

[224] Sections 35(4) and 36(3).
[225] Sections 35(5) and 36(4).
[226] See *CC8—Merger Remedies: Competition Commission Guidelines,* November 2008 (the 'Merger Remedies Guidelines'), paragraphs 2.14 & 2.15.

(b) in paragraphs 8.99 to 8.147 we evaluate the effectiveness of these remedy options and identify the least onerous, effective remedy;

(c) in paragraphs 8.148 to 8.160 we set out our consideration of RCBs; and

(d) finally, in paragraphs 8.161 to 8.164 we summarize our decisions on remedies.

Outline of possible remedy options

8.9 In paragraphs 8.10 to 8.147 we outline the remedy options that we have considered:

(a) in paragraphs 8.10 to 8.12 we discuss full prohibition of the proposed JV;

(b) in paragraphs 8.13 to 8.30 we discuss possible divestiture remedies to address unilateral effects in markets for primary aggregates, asphalt and RMX;

(c) in paragraphs 8.31 to 8.79 we discuss possible divestiture remedies to address coordinated effects in cement; and

(d) in paragraphs 8.80 to 8.98, we discuss issues relating to the implementation of divestiture remedies.

Full prohibition

8.10 In the Remedies Notice we stated that full prohibition of the JV would prevent an SLC from arising in any relevant market and that full prohibition would therefore represent a comprehensive solution to all aspects of the SLC with no risks in terms of effectiveness.

8.11 In their response to the Remedies Notice, the main parties submitted that the divestitures they had put forward represented 'as comprehensive a solution as is reasonable and practicable to address the substantial lessening of competition and any adverse effects resulting from it' in accordance with Section 36(3) of the Act. Therefore, they submitted that a full prohibition would be disproportionate.

8.12 We took the view that full prohibition would clearly be an effective and comprehensive solution. However, we recognized the possibility that other, less onerous remedies might also be available. We therefore considered whether there were any alternatives that might be similarly effective, while enabling the main parties to meet some of their aims for the proposed JV.

Divestitures to address unilateral effects in primary aggregates, asphalt and RMX

8.13 In paragraphs 8.14 to 8.30 we consider divestiture remedies to address the SLCs arising from unilateral effects in markets for primary aggregates, asphalt and RMX.

8.14 In their response to the Remedies Notice, the main parties proposed to address these unilateral effects by means of a series of divestitures. We begin by summarizing the main parties' proposals (paragraphs 8.16 and 8.17). We then consider the likely impact of these proposals on the SLCs identified in each of:

(a) primary aggregates for construction applications (paragraphs 8.19 to 8.23);

(b) specialist aggregates (paragraphs 8.24 and 8.25);

(c) asphalt (paragraphs 8.26 to 8.29);and

(d) RMX (paragraph 8.30).

8.15 A detailed assessment of the impact of possible remedies in relation to primary aggregates, asphalt and RMX is included in Appendix U.

Summary of the main parties' proposed divestitures to address unilateral effects

8.16 In designing the package of proposed divestitures, the main parties applied the following principles—one or more of which may apply to any given problematic overlap—with the intention of ensuring that, post-divestiture, the SLCs would be remedied in a clear-cut and comprehensive manner:

(a) divestiture would eliminate the entire increment—ie either Tarmac or Lafarge would divest all of its existing sites within the problematic overlap;

(b) divestiture of the equivalent volume of the market share increment would solve the problematic overlap—ie a divestiture would result in the JV entity having a production share that was no greater than that of Lafarge or Tarmac (whichever was the larger) before the proposed JV;

(c) post-divestiture, the production share of the JV entity would fall below 33 per cent;

(d) in relation to local overlaps, the site at the centre of a problem radial would be divested;[227] and/or

(e) divestiture would restore the number of fascias (see paragraph 6.9) to the position before the proposed JV.

8.17 Having applied these principles, the main parties proposed to divest one or more sites in every problematic overlap in order to remove any potential source of the SLC. The proposed divestiture package comprised:

(a) Tarmac's [✂] per cent interest in MQP;

(b) eight primary aggregates quarries (ten including MQP) and one aggregates depot;

(c) two asphalt plants (eight including MQP); and

(d) six RMX plants.[228]

---

[227] The main parties submitted that this approach was consistent with the CC's methodology in identifying potentially problematic areas where, to the extent that an SLC was provisionally found in a radial, that radial would be identified as potentially problematic irrespective of whether it would also fall within another problem radial. The main parties submitted that, by implication, to the extent that the site which had caused the area to be identified as potentially problematic was removed, then no SLC could arise in the area; an SLC would only exist in the area to the extent that the site was also captured by a separately identified problem area. Source: Main parties' response to addendum to provisional findings and the Remedies Notice.

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

Assessment of the main parties' divestiture proposals to address unilateral effects

8.18 In this package of proposed divestitures we have considered their likely impact on the SLC we have identified in each problematic overlap. While we did not necessarily agree with all of the principles that the main parties used when selecting which assets should comprise part of the divestiture package, we did agree that an effective solution to the SLC would generally involve either the elimination of the entire increment to production share (principles *(a)* and *(b)*) and/or a reduction of the post-divestiture production shares to at or below 33 per cent (principle *(c)*). Whilst these three principles have therefore formed part of our consideration, we have assessed each proposed divestiture on its own merits.

- *Primary aggregates for construction applications*

8.19 We first considered the main parties' proposed divestitures in relation to local SLCs in markets for primary aggregates for construction applications. In Appendix U, paragraphs 2 to 56, we look in detail at the proposed divestitures in each problematic radial to assess their effectiveness in addressing the SLC in each area.

o *Summary of main parties' proposed divestitures*

8.20 The main parties' proposed to divest eight quarries (three Lafarge,[229] five Tarmac[230]) and one Lafarge depot (Ashbury) to address 19 problematic local overlaps. The details of the proposed divestitures are set out in Table 13.

TABLE 13 **Main parties' proposed primary aggregates divestitures**

Radial	*Proposed divestiture*
Thrislington (L) Coxhoe (T) Scorton (T)	Coxhoe (T)
Cadeby (L) Holme Hall (T) Whitwell (L)	Holme Hall (T)
Dowlow (L) Ashbury depot (L) Agecroft depot (T) Bredbury depot (T)	Dowlow (L) & Ashbury depot (L)
Tunstead (T) Ballidon (T) Dene (T) Caldon Low (T)	Dowlow (L)
Mountsorrel (L)	Cliffe Hill (MQP)
Cliffe Hill (MQP) Mancetter (T)	Cliffe Hill & Griff (MQP)
Swansea (T)	Britton Ferry (L)
Willington (L)	Willington (L), Potton (T)

Source: Main parties.

8.21 The majority of the main parties' proposed divestitures would result in the JV entity production share being at or below 33 per cent. The remainder of the radials where the JV entity production share would be above 33 per cent showed either no increase or only a marginal increase on the share of either Lafarge or Tarmac (whichever was

[229] Dowlow, Britton Ferry and Willington.
[230] Coxhoe, Holme Hall, Potton and the MQP quarries at Cliffe Hill and Griff.

the larger) before the proposed JV. We took the view that a divestiture that produces no increase, or only a marginal increase, in production share compared with the situation before the proposed JV is likely to be an effective remedy.

8.22 In terms of divestiture risks, the proposed sites put forward for divestiture generally displayed:

(a) a high proportion of external sales;

(b) a relatively fragmented customer base;

(c) low risk in terms of consents for change of control (a number of proposed divestitures were freehold sites); and

(d) a reserve life which, based on third party comment, would appear adequate to attract potential purchasers.

8.23 However, we noted the following characteristics of some of the proposed disposals which, in our judgement, make these divestitures critical to the overall success of any solution to the SLCs that we have identified and/or increase the risks surrounding their divestiture:

(a) Within the divestiture package there are a number of key assets, the divestiture of which would address a number of problematic overlaps. This increases the importance of a prompt and effective disposal of these sites to the success of the remedy package as a whole. These are: Dowlow (with or without the Ashbury depot) which addresses SLCs in eight radials (as well as the SLC in HPL for FGD—see paragraph 8.25), Holme Hall, Coxhoe and Tarmac's stake in MQP each of which addresses SLCs in three radials (Tarmac's stake in MQP also addresses the SLC in rail ballast—see paragraph 8.24).

(b) Holme Hall [✂];

(c) The divestitures of Cliffe Hill and Griff are proposed to be undertaken through the sale of Tarmac's [✂] per cent holding in MQP—a JV with Hanson. We noted [✂] that Tarmac's interest could be sold to a third party ([✂]).[231,232]

(d) The main parties have proposed to divest co-located asphalt and RMX plants at the proposed divestiture sites with the exception of [✂].[233] Of the co-located assets at these three sites we took the view that only the RMX plant at Briton Ferry (based on the high proportion of total site output used by the plant234) needed be included in the divestiture package. However, the existence on the other sites of co-located plants owned by the JV entity constitutes an additional source of purchaser risk.

---

[231] [✂]
[232] [✂]
[233] The main parties told us that the co-located asphalt and RMX plants at Ashbury depot were not included within the proposed divestiture but that they would be open to divesting them if required by a purchaser.
[234] The RMX plant at Briton Ferry used [✂] per cent of the output from the site in 2011.

- *Specialist aggregates*

  o *Rail ballast*

8.24 The main parties have proposed to divest Cliffe Hill quarry through the sale of Tarmac's [✂] per cent interest in MQP. Cliffe Hill quarry is Tarmac's only material interest in rail ballast production and as such would remove any overlap between Tarmac and Lafarge in rail ballast.

  o *HPL for FGD*

8.25 The main parties have proposed to divest Dowlow. As this is Lafarge's sole UK production site for HPL for FGD, divestiture of Dowlow would remove any overlap between Tarmac and Lafarge in HPL for FGD.

- *Asphalt*

8.26 We identified two problematic overlaps in relation to asphalt in the areas around Lafarge's Higham and Wivenhoe plants. To address these SLCs, the main parties proposed to divest Tarmac's asphalt plant at Cavenham and Lafarge's Wivenhoe plant.235 Details of these sites are included in Appendix U, paragraphs 57 to 68.

8.27 The main parties submitted that the divested sites were capable of being operated independently and on a stand-alone basis. In addition, they considered that there would be no difficulties in obtaining necessary consents.

8.28 We took the view that in the Lafarge Higham area either the divestiture of Tarmac's Cavenham plant (as proposed by the main parties) or Lafarge's Cambridge plant would remove the overlap giving rise to the SLC. On balance, we concluded that the Cavenham plant has lower divestiture risks and therefore provides a preferable basis for divestiture.[236] However, [✂] for Tarmac Cavenham [✂], we took the view that the divestiture risks associated with the Tarmac Cavenham plant were material.

8.29 We took the view that the divestiture of Lafarge's Wivenhoe plant would remove the overlap between the main parties in the area based around that plant. We also noted that [✂], which is likely to reduce the risks of achieving an effective disposal.[237]

- *RMX*

8.30 We found seven problematic overlaps in relation to RMX (see Appendix U, paragraph 69). The six proposed divestitures would eliminate the entire increment arising from the proposed JV in each problematic overlap.[238] In each case the main parties told us that: there were no consents which would be difficult to obtain; all assets were predominantly focused on external supply; and each asset could be operated independently and on a stand-alone basis. However, [✂] we were unable to reach a clear conclusion about the financial performance of all the individual sites and we

---

[235] The main parties stated that in both cases the chosen divestiture eliminated the entire increment to production share. In the case of Lafarge Wivenhoe the divested site is also at the centre of the radial.
[236] Lafarge's Cambridge plant is restricted in its supply options as it needs to be supplied by rail. In addition it has shared infrastructure with the remaining elements of the site and it uses only around 20 per cent of aggregates coming into the rail head.
[237] We did not consider that Wivenhoe quarry needs to be included in the disposal given [✂] and the alternative sources of aggregates available to an acquirer.
[238] The seven problem areas included both the Lafarge Greenock and Tarmac Greenock areas. The proposed divestiture for both the Lafarge Greenock and Tarmac Greenock areas is the same RMX site (Tarmac Greenock).

concluded that this would constitute a divestiture risk if the sites were sold on a stand-alone basis (see also paragraphs 8.69 to 8.71).

Divestitures to address coordinated effects in cement

8.31 We now consider divestiture remedies to address coordinated effects in the market for the supply of bulk cement in the UK. In evaluating possible divestitures as a remedy to this SLC, we have considered the likelihood of achieving a successful divestiture including the associated risks, as well as the implications of any recon-figured JV on the susceptibility of the UK bulk cement market to coordination. To be effective in remedying this SLC, we took the view that any divestiture package would need to contain substantial cement and RMX operations. Such a package would also need to be appropriately configured to be attractive to potential purchasers and to enable the purchaser to operate effectively as an independent competitor in the UK cement market.

Divestiture proposal put forward by the main parties

8.32 In considering possible divestiture remedies, we engaged actively with the main parties about the scope of potential divestiture packages with a view to jointly identifying potential divestitures that had a realistic prospect of being effective and which the main parties were prepared to put forward. We tested our views about possible divestiture packages with third parties, including those parties that had been identified by the main parties as potential purchasers (see Appendix T).

8.33 As a result of these discussions,[239] the main parties put forward a proposal to divest:

(a) Lafarge's Hope cement plant (with a cement capacity of around [✂] million tonnes a year);

(b) Lafarge's Dowlow quarry, which would provide the acquirer of Hope with a potential alternative source of limestone;[240]

(c) associated rail-linked depots at Theale in West Berkshire, Walsall in the West Midlands and Dewsbury in West Yorkshire (Hope also has permission to deliver up to [✂] ktpa of cement by road);[241] and

(d) a portfolio of [✂] RMX plants with approximately [✂] of volume (equivalent of around [✂] of blended cement[242]). This would enable the purchaser to meet around [✂] of Hope's cement capacity through internal sales.

8.34 The divestiture would include freehold and leasehold interests for existing quarries and future reserve areas plus any existing raw material supply contracts; all existing consents and authorizations; relevant employees (subject to TUPE regulations); and the existing customer list.[243] The main parties also offered to provide interim

---

[239] [✂]
[240] At the main party hearing, Lafarge told us that the Dowlow site contained over [✂] of consented limestone reserves and was rail-linked and 10 miles away from Hope. [✂]
[241] The main parties told us that Theale would provide the buyer of Hope with capacity of [✂] and access to demand in the South of England, while Dewsbury with capacity of [✂] was well located to serve the major conurbations in the North of England. Each of these depots has blending facilities on site which could be utilized by the purchaser to produce CEM II or CEM III, effectively expanding the cement production capacity of the cement plant. The Walsall depot has further capacity of [✂].
[242] Based on a conversion rate of [✂].
[243] The main parties stated that there were no long-term customer contracts at Hope.

transitional arrangements of management services including technical and sales teams. They told us that this was usual in such a deal.

8.35 The divestiture of the Hope cement works would include the co-located quarries. The main parties told us that Hope had consented reserves of limestone for approximately [✂] years, and potential reserves of limestone for approximately [✂] years (both figures assuming operation at full capacity). [✂][244]

8.36 In addition, the main parties told us that by removing Hope from the network of the JV entity it would reduce the rail capacity of the JV entity and the ability of the JV entity to supply packed products to customers located in the South-East of England. This would create a short-term issue for packing Lafarge's Mastercrete and General Purpose Cement at West Thurrock, which require some [✂] per year of blended cement, some of which requires an air entraining agent, both of which products were manufactured at Hope and despatched by rail to West Thurrock. Uprating the rail capacity of the residual network and arranging for the limestone-blended cements would require capital projects, taking up to [✂] to complete. The JV entity would therefore be open to concluding a non-reciprocal, short-term supply contract with the buyer of Hope, subject to the CC's agreement, to fulfil West Thurrock's needs for that interim period and to offer some guaranteed supply on a transitional basis to a new buyer. The main parties also noted that, for this period, supplying West Thurrock through such an arrangement would free up capacity at Theale and Dewsbury.

8.37 We noted this proposal. We took the view that there should be no obligation on potential purchasers to enter into any such arrangement. The nature of any such supply arrangement between the JV entity and the acquirer would therefore need to be subject to voluntary negotiation between the JV entity and the purchaser of the divested operations. While the CC would be prepared to consider such transitional arrangements being agreed between the JV entity and any potential purchaser, the CC would need to be satisfied that any such agreements would be in place for no longer than necessary to enable the JV entity to make alternative arrangements to supply blended cement to West Thurrock (and in any case, for a period of no more than [✂]) and would not compromise the incentive and/or ability of the purchaser to compete independently of the JV entity.

8.38 The main parties stated that this divestiture would present a 'turnkey' solution enabling any potential acquirer to enter the UK cement market through a single acquisition. The main parties submitted that this option would address each of the conditions for coordination as well as enhancing substantially the external constraints to which both the JV entity and other cement suppliers would be subject. The main parties noted in addition that the new cement producer(s) would be 'long' in cement—ie the entrant would need to compete in the independent RMX market for its cement products as its own RMX sites would not have enough requirement to use all of its cement capacity—and that this would create strong incentives on the new cement producer(s) to compete actively for third party sales.

8.39 In support of their proposed divestiture package, the main parties also proposed three behavioural remedies. These were as follows:

(a) [✂];

(b) to limit the JV entity's participation in any MPA statistical exchange (see paragraph 6.151) so that, in relation to both bulk cement and RMX, the JV entity

[244] There are additional limestone and shale deposits in the area which could be utilized to extend the life of the plant further, if full extraction rights/permissions are granted.

would submit and receive data [✂], and at no more geographically disaggregated level than on the basis of Economic Planning Regions (EPRs); and

(c) to undertake that the JV entity would cease issuing standardized pricing letters for bulk cement (see paragraphs 6.141 to 6.148), such that any price changes would in future only be notified to customers on an individual basis.

8.40 We took the view that the first of these proposals was only likely to be of limited effectiveness, as it would only [✂] and was vulnerable to circumvention. We judged that this proposal would add no value to the effectiveness of a divestiture remedy.

8.41 We took the view that the other measures—in relation to MPA statistical data and price announcement letters—might be beneficial in reducing the information flow between the proposed JV entity and other cement producers. However, they would primarily address a pre-existing characteristic of the market, rather than the SLC that we had found in this inquiry or any of its adverse effects. Moreover, the impact of a unilateral commitment of this nature on the underlying conditions of competition would be substantially less than a measure that applied to the whole of the UK bulk cement market. Accordingly, we leave the assessment of these and other possible remedies to address any existing shortcomings in competition in aggregates, cement and RMX markets for the market investigation (referred to the CC by the OFT on 18 January 2012) to consider (see paragraph 8.7).

8.42 We therefore decided not to pursue these proposed behavioural remedies.

Specification of divestiture package

8.43 In exploring the possible specification of an appropriate divestiture package, we considered the following two key components:

(a) which cement plant (or plants) would form the basis of the divestiture package (see paragraphs 8.44 to 8.65); and

(b) which RMX operations would be included within the divestiture package, and how much would the JV entity be permitted to retain (see paragraphs 8.66 to 8.79).

- *Identity of cement plant(s) to be included in any divestiture package*

8.44 We considered the identity of any cement plant (or plants) to be divested. We looked first at the possibility of divesting Tarmac's Tunstead plant, which would, in effect, result in a divestiture of the entire overlap between the main parties' UK cement operations and hence a removal of the increment to market share (as Tunstead is Tarmac's only cement plant). We took the view that divestiture of Tunstead, as well as being the basis of a potential remedy in its own right, provided a good baseline against which to evaluate alternative cement divestitures. Against this background, we then considered the main parties' proposal to divest Lafarge's Hope cement plant as the cornerstone of a divestiture package.

8.45 Table 14 compares some of the main characteristics of the Hope and Tunstead cement plants. Further details of these two plants are included in Appendix V.

TABLE 14 **Comparison of Hope and Tunstead cement plants**

	Hope	*Tunstead*
Overview	Lafarge's largest GB cement production facility	Tarmac's only GB cement production facility
	Cement-based quarry	Quarry supplying lime and aggregates as well as inputs to cement plant—BL&C
	Inside National Park	[✂]
Capacity	Two kiln installations with capacity to produce [✂] of clinker or [✂] of cement	One kiln with capacity of [✂] cement. Planning permission for additional kiln
2011 cement sales volume	[✂]	[✂]
EBITDA	2011 £[✂]	2011 £[✂] (BL&C)
Consented Reserves*	Limestone†—[✂] years (potential [✂] years) Sulphur shale†—[✂] years ([✂])	Substantial limestone reserves Shale and sand not available on site
Rail capacity	[✂] Currently distributes to [✂] depots	[✂] mtpa (would need to be shared with Lime and stone business) Currently distributes to [✂]
Road capacity	[✂] Linked to life of planning consents for quarry—no expectation will reduce unilaterally	No formal limit on sales by road from Tunstead.
Efficiency	No 1 Kiln reliability in excess of [✂]%	Newest plant in UK, reputation as low cost, high efficiency
	One of the best performing plants in Lafarge worldwide	
Products	CEM I—III Blending facilities on site	[✂]
Management	Order taking and dispatch teams	[✂]

Source: CC based on information provided by the main parties.

*Based on maximum production.
†[✂]

o *Tarmac's Tunstead plant as basis of divestiture package*

8.46 The main parties told us that, depending on the composition of the rest of the divestment package, they were prepared to put forward a divestiture of the Tunstead cement plant, provided the JV entity was able to retain ownership of the lime operations and quarry on which the plant is situated.

8.47 Tunstead cement works is a well-invested, new cement works co-located with a large limestone quarry and lime plant. Together the entire site's operations formed BL&C. The main parties told us that the Tunstead site was essentially a limestone quarry with a lime plant on it: the cement plant was added later in the development of the site. In 2011 the cement plant processed about [✂] per cent of the volume of limestone quarried from the site. It is situated in the centre of the quarry.

8.48 The site has consented reserves of limestone of around [✂] and further unconsented reserves of around [✂]. The cement plant is supplied with clay and sand [✂]. It has a capacity of around [✂].

8.49 The lime, limestone and cement plants share the same infrastructure at Tunstead. In particular, the site has rail capacity of [✂] and the main parties told us that the rail depots were configured for internal supply, [✂].

8.50 The main parties told us that the cement produced by Tunstead was nearly all currently sold internally to Tarmac RMX sites and there was therefore currently very limited external customer-facing infrastructure (or customer lists) available to an acquirer.

8.51 We discussed the possibility of cement plant divestitures with third parties, including those that had been identified by the main parties as potential purchasers of a cement divestiture. Several of these third parties mentioned Tunstead. The general market perception of the Tunstead plant appears to be that:

(a) it is an efficient cement plant (in particular, compared with Hope), which is well-invested with substantial reserves;

(b) the entire site provided a good diversity of products—splitting out the cement works was less attractive to some parties; and

(c) it is very internally focused on supplying Tarmac's own RMX operations, although supply agreements and/or RMX divestitures could solve this.

8.52 The main parties accepted that Tunstead was viewed externally as the newest and lowest-cost cement plant in the UK and that potential buyers might consider this a preferable divestiture, particularly if this would imply a divestiture of the co-located quarry operations. The main parties submitted that it would not be proportionate to require the divestiture of the entirety of BL&C as the SLC had only been found in cement and doing so would also present substantial difficulties in terms of the deal terms of the joint venture ([✂]). Accordingly they did not put forward divestiture of BL&C as a possible remedy.

8.53 We explored the practicalities of carving out the cement plant from the rest of the Tunstead site. The main parties believed that this would be feasible although there would be certain difficulties that would need to be addressed: [✂].

8.54 In addition, we took the view that the dependence of any potential purchaser on contractual arrangements with the JV entity for the purchase of limestone represented a significant source of purchaser and composition risk for any divestiture of the Tunstead cement plant that did not also include the co-located quarry. We also noted that the [✂].

8.55 The main parties considered that the divestiture of Tunstead would represent an inferior remedy option to a divestiture package based on the Hope plant. Tunstead was currently configured to supply Tarmac's internal RMX business and conversion to enable it to make more external sales would be costly and time-consuming for a new entrant.

8.56 In summary, the Tunstead cement plant is an efficient plant and the newest one in the UK (eight years old) with low variable costs. It has cement capacity of [✂]. The Tunstead site is fully integrated and has substantial reserves of limestone, but there would be significant risks associated with extricating the cement plant from the rest of BL&C (as the operators of the co-located plants would need to share the quarry and a lot of the infrastructure). Nearly all of Tunstead's cement sales are internal and so the new owner would not inherit many external customer relationships or much of the infrastructure needed to serve them.

o *Lafarge's Hope cement plant as basis of divestiture package*

8.57 Hope is one of the largest cement plants in the UK with [✂] cement capacity. It is a stand-alone site situated in the Peak District National Park. It currently uses [✂] rail depots at which it blends and packages its CEM II/III products, of which two would be included in the divestiture package along with Tarmac's Walsall depot.

8.58 We discussed the possibility of a divestiture of Hope with various third parties, including those that had been identified by the main parties as potential purchasers of a cement divestiture (see Appendix T). The possibility of a divestiture of the Hope cement plant had been discussed with a number of parties during the initial scrutiny of this transaction by the OFT. As a result, some third parties had previously reviewed an Information Memorandum about Hope, though none had conducted any detailed due diligence about the plant.

8.59 The general market perception of the Hope plant (although there was variation in views) is that:

(a) it is an old plant which is less efficient and higher cost than other more modern plants (and it would be difficult to modernize it);

(b) it will require substantial capital expenditure in the future, and there has been insufficient investment in the plant;

(c) it is likely to run out of reserves relatively soon—it does not have sufficient limestone reserves for viable long-term operation; and

(d) it is in a National Park and so it may not be possible to extend the reserves at the site.

Nevertheless, there was still some interest in the plant.

8.60 Drawing on these comments and our own analysis, we identified the following main risk factors in relation to the effectiveness of a remedy package that was based on the divestiture of the Hope cement works:

(a) The efficiency and cost-effectiveness of Hope.

(b) Reserves position and planning consents.

(c) Level of capital investment in the plant.

(d) Ability to operate Hope successfully on a stand-alone basis.

8.61 We consider each these risk factors in detail in Appendix V. In summary we found:

(a) The evidence we saw on costs indicated that Hope [✂].

(b) The data on operational efficiency is more difficult to compare directly. Nevertheless it appears that Hope is neither the best nor worst of Lafarge's UK plants and towards the top end of the range compared with other Lafarge plants worldwide.

(c) As regards the concerns with the Hope plant's reserves, it appears that many of these can be mitigated and many will not crystallize for at least 20 years. The inclusion of Dowlow in the divestiture package should further help to mitigate these risks.

(d) There has been substantial capital expenditure at Hope in the recent past and we would expect any further requirements to be reflected in the price paid for the plant.

(e) The challenges associated with operating Hope as a stand-alone plant are likely to be substantially less than the difficulties of operating the Tunstead cement plant on a stand-alone basis.

o *Conclusion on identification of cement plant(s) as basis for divestiture*

8.62 Divestiture of Tunstead along with sufficient RMX operations could, in principle, form the basis of an effective divestiture remedy. However, there are significant practical problems with separating out the Tunstead cement operations for divestiture, as it is part of a larger operation (BL&C) and would need to have long-term agreements with the owner and operator of the site (ie the JV entity).

8.63 Hope is approximately 50 per cent larger than Tunstead in terms of capacity although it has no possibility of further expansion, whereas Tunstead has planning permission for a second kiln. Comparing the two plants further, Hope is older [✂].

8.64 Although Tunstead has more years of limestone reserves on the site, it would be required to rely on the co-located quarry owner if the plant was sold separately and would in any case continue to need [✂] shale and sand for its cement production operations.

8.65 We decided to focus on the Hope plant as the basis for a potential divestiture remedy, primarily because it did not face the same practical issues of separating the plant from the associated quarry.

- *Divestiture of RMX operations*

8.66 In addition to the divestiture of a cement plant, any divestiture package that would be effective in remedying the SLC that we have found in the UK bulk cement market would also need to include substantial RMX operations. This is for the following reasons.

(a) First, the inclusion of some RMX along with the divested cement plant is likely to be needed in order to achieve a successful disposal and to enable a purchaser of any divested plant to be an independent and effective competitor to existing UK cement producers.

(b) Secondly, paragraph 6.621 summarizes several ways in which the combination of Tarmac and Lafarge's RMX operations is likely to increase susceptibility of the UK bulk cement market to coordination. Divestiture of RMX operations—whether as part of any cement divestiture package and/or on a stand-alone basis—would therefore be necessary to address these aspects of the SLC.

8.67 The amount of RMX included in any divestiture, and just as importantly the amount of RMX retained by the JV entity post-divestiture, is a critical issue to the effectiveness of any divestiture remedy as a solution to the SLC. We consider this issue in detail in paragraphs 8.102 to 8.145. Here we set out some of the main practical issues relating to any divestiture of RMX sites:

(a) the extent of RMX operations likely to be needed by potential purchasers of any divested cement plant(s) (see paragraph 8.68);

(b) the scope for stand-alone sales of RMX plants (see paragraphs 8.69 to 8.71); and

(c) a description of the main parties' proposed divestiture package for RMX (see paragraphs 8.73 to 8.79).

o *The extent of RMX operations likely to be needed by potential purchasers of divested cement plant(s)*

8.68 We discussed the possibility of divestiture of RMX sites alongside any cement plant, with third parties including those that had been identified by the main parties as potential purchasers of a cement divestiture. The overall view of the parties we spoke to was that the divested cement plant would need to be accompanied by some RMX operations and that these in-house RMX operations would need to represent at least 25 per cent the cement plant's capacity, with some parties suggesting that a higher proportion (eg 40 per cent) would be desirable.

o *Scope for 'stand-alone' sales of RMX operations*

8.69 To minimize execution risk, the main parties told us that [✂].

8.70 We considered who, other than a potential purchaser of any divested cement plant, might be interested in purchasing RMX operations. We identified a number of possible scenarios, for example:

(a) RMX plants could be packaged with some or all of the primary aggregates sites to be divested.

(b) RMX plants might be sold separately to existing regional aggregates & RMX players.

(c) RMX plants might be sold separately to stand-alone RMX operators.

8.71 Overall, drawing on our discussions with the main parties and third parties, we took the view that execution risk would be lower if all RMX plants were divested in a single package with any cement plant to be divested. However, we also took the view that there was probably some scope for a limited number of RMX plants (eg up to 20 or 30) to be sold to other purchasers.

8.72 Our expectation is that, to the extent possible, all of the RMX sites to be divested would be sold to the purchaser of the Hope cement plant. In the remedies implementation stage, the CC would be prepared to consider a limited number of these sites being divested to another purchaser, for example if potential purchasers of the cement divestiture were unwilling to acquire all of the RMX sites, or if local unilateral effects concerns might be raised in respect of a purchaser's existing RMX operations. However, the CC would need to be satisfied that this was necessary to achieve an effective disposal, did not compromise the remedy's effectiveness and did not reduce the overall volumes of RMX to be divested from the JV entity.

o *Outline of the main parties' proposals*

8.73 Taking into account the need to include a sufficient number of RMX sites to remedy effectively the SLC arising from coordinated effects, the main parties told us that they had selected RMX sites to be included in the divestiture package using the following criteria:

(a) Antitrust considerations:

(i) The main parties had selected the six sites that needed to be divested to address SLCs arising from unilateral effects in local RMX markets.

(ii) There was a preference for sites which had fewer links to the JV entity (for example, RMX sites which had aggregates supplied by third parties or which did not have co-located plants were preferred).

(iii) The main parties also said that they had selected sites which were able to be operated equally well by the acquirer.

(b) Marketing considerations:

(i) The main parties told us that they had selected RMX sites that were situated to provide extensive coverage within the region surrounding each rail depot and the Hope plant.

(ii) The portfolio of sites was chosen so as to be readily saleable and in operational condition and with no requirement for third party consents of unmanageable consent issues.

(c) Commercial considerations: the main parties had a preference for retaining Lafarge sites with existing VAP capability and/or Tarmac sites which were most suitable for conversion.[245]

8.74 We took the view that the approach taken by the main parties for selecting RMX sites for divestiture was a sensible and pragmatic approach.

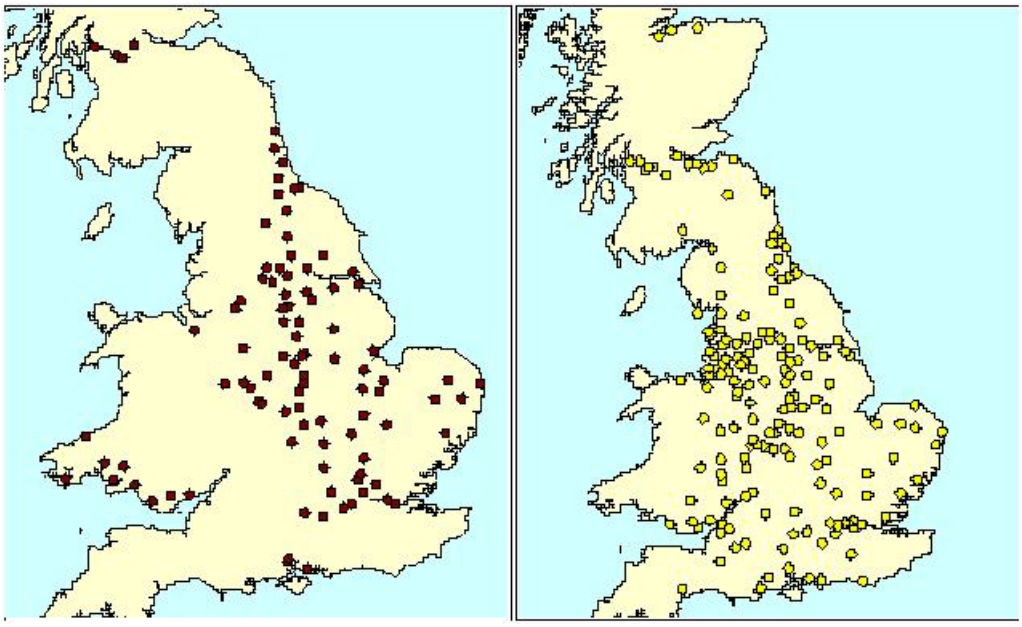
8.75 The main parties proposed to include in the divestiture package [✂] RMX plants, with a combined volume of RMX of [✂] m^3 (estimated volume of RMX in 2010). The RMX plants proposed for divestiture are listed in Appendix W. The main parties provided data showing that following this divestiture, the resulting JV entity would have approximately [✂] a similar amount of RMX to Lafarge today ([✂]). In the remedies implementation phase, the CC would be prepared to allow some flexibility about the specific RMX sites to be divested—for example, if potential purchasers did not wish to acquire specific RMX sites, or if local unilateral effects concerns might be raised in respect of a purchaser's existing RMX operations. However, the CC would need to be satisfied that this was necessary to achieve an effective disposal, did not compromise the remedy's effectiveness and did not reduce the overall volumes of RMX to be divested from the JV entity.

8.76 We compared the geographic coverage of the divested business and the new JV compared with that of Tarmac and Lafarge prior to the JV. We set out below in Figure 2 the geographic coverage of the Lafarge and Tarmac RMX sites before the proposed JV.

[245] To produce VAPs RMX sites need more space than a traditional RMX plant (eg VAPs require an additional silo). As such some Lafarge and Tarmac sites are too small to be converted to VAP production.

FIGURE 2

Lafarge's (left) and Tarmac's (right) RMX plants before the proposed JV



Source: Main parties.
Note: Lafarge currently has [✂] plants (of which [✂] mothballed) producing [✂] m^3 RMX (2010) representing ([✂] cement). Tarmac currently has [✂] plants (of which [✂] mothballed) producing [✂] m^3 (2010) representing ([✂] cement).

8.77 Figure 3 shows the effect of the proposed divestiture on the coverage of both the JV entity and the divested RMX plants.

FIGURE 3

RMX plants of the proposed JV entity (left) and proposed divestitures (right)

[✂]

Source: Main parties.
Note: The proposed JV entity would have [✂] plants following divestiture (of which [✂] mothballed) producing [✂] m^3 (2010) and the proposed divestitures cover [✂] plants producing [✂] m^3 (2010). [✂]

8.78 Following the proposed JV, the JV entity would have a [✂] number of RMX sites to Lafarge today and these would have a [✂] wide geographic coverage. It would be [✂].

8.79 We compared the costs for any potential purchaser of Hope of supplying cement to the divested sites with the cost Tarmac would incur to supply cement from Tunstead if it had the same RMX network.[246] This showed that for the majority of RMX sites, the new operator would face lower costs of supply than Tarmac would. We also looked at whether it would be commercially viable for the new operator to supply all the divestiture RMX sites from Hope. Our analysis showed that for a small percentage of sites (by delivered cement volume) it might not be commercially viable to supply them on a long-term basis from Hope. However, we considered it unlikely

[246] Our analysis (set out in Appendix W, Annex A) looked at all sites but concentrated specifically on RMX sites in Scotland and Wales as these were in general the furthest sites from the rail depots included in the package and, as such, were likely to incur the highest supply costs.

that this would materially weaken the ability of the new operator of Hope to be an effective competitor in the bulk cement market, given that any purchaser of the divested business would be in no worse a position than Tarmac today.

Implementation of possible divestiture remedies

8.80 In paragraphs 8.82 to 8.98 below, we consider issues relating to the implementation of possible divestiture remedies:

(a) in paragraphs 8.82 to 8.86 we set out our views on the approach to be taken to ensure the suitability of any purchaser of the divested operations;

(b) in paragraphs 8.87 to 8.95 we set out our views on the upfront buyer requirements that would be necessary in relation to divestitures; and

(c) in paragraphs 8.97 to 8.1(a), we set out our views on other aspects of any divestiture process.

8.81 Our assessment of these issues draws on our evaluation of the risks associated with the various divestiture options set out in Appendix X.

Suitable purchaser

8.82 The identity and capability of a purchaser is of major importance in ensuring the success of any divestiture remedy. The risk that no suitable purchaser would be found for the divestiture package is a significant risk to the effectiveness of any divestiture remedy. We set out below the criteria that the CC would apply in assessing the suitability of potential purchasers for any divested operations. This includes an initial assessment of the desirability, or otherwise, of continuing links between the JV entity and any potential purchaser of divested operations.

- *Criteria for suitable purchasers*

8.83 The CC will wish to satisfy itself that a prospective purchaser is independent of the merger parties, has the necessary capability to compete, is committed to competing in the relevant market(s) and that divestiture to the purchaser will not create further competition concerns.[247] These criteria are set out in more detail below:

(a) Independence—the purchaser should have no significant connection to the merger parties that may compromise the purchaser's incentives to compete with the merged entity, for example, an equity interest, shared directors, reciprocal trading relationships or continuing financial assistance.

(b) Capability—the purchaser must have access to appropriate financial resources, expertise and assets to enable the divested business to be an effective competitor in the market. This access should be sufficient to enable the divestiture package to continue to develop as an effective competitor.[248]

(c) Commitment to relevant market—the CC will wish to satisfy itself that the purchaser has an appropriate business plan and objectives for competing in the relevant market(s).

---

[247] Merger Remedies Guidelines, paragraph 3.15.
[248] For example, a highly leveraged acquisition of the divestiture package that left little scope for competitive levels of capital expenditure or product development is unlikely to satisfy this criterion.

(d) Absence of competitive or regulatory concerns—divestiture to the purchaser should not create a realistic prospect of further competition or regulatory concerns. Moreover, the CC's approval of a purchaser may be subject to clearance by the OFT or other regulatory authority.

8.84 The CC will consider the suitability of each potential purchaser on its own merits. The CC will wish to satisfy itself about each of the above criteria before approving any potential purchaser. We set out below, what appear to us likely to be some of the key issues in the assessment of purchaser suitability in relation to the divestitures proposed to address unilateral effects SLCs and to the proposed divestiture of cement and RMX operations to address the SLC arising from coordinated effects in the UK cement market.

- *Purchaser suitability: Divestitures to address unilateral effects*

8.85 In considering whether a divestiture is likely to give rise to competitive concerns, we will apply the same framework to the competitive assessment as we have used in our analysis of unilateral effects in this investigation. In particular, in relation to local markets for primary aggregates, asphalt and RMX we will apply the same methodology to delineate the catchment area around production sites and to calculate shares of production in the catchment areas (see paragraphs 6.11, 6.27, 6.31 and 6.34).[249]

- *Purchaser suitability: Divestitures to address coordinated effects in cement*

8.86 In considering the suitability of any purchaser of divested cement and RMX operations, the CC is likely to pay particular regard to the following factors:

(a) Given their existing market position in cement, and the nature of our concerns about coordinated effects, it is extremely unlikely that either Cemex or Hanson would be found to be a suitable purchaser of any cement and RMX divestiture.

(b) In its consideration of independence and the likelihood of competition concerns, the CC will look closely at existing links and other commercial interactions (whether in the UK or elsewhere) between potential purchasers and the JV partners, Cemex and Hanson.

(c) Given that our SLC relates to coordinated effects in cement, we will look closely at any evidence of cartel activity or any other infringement of Article 101(1) TFEU or equivalent prohibitions (including any conduct admitted during leniency or other settlement proceedings) involving potential purchasers or their senior management. The CC will look particularly closely at participation in any infringements in cement, RMX and/or related markets. In assessing the suitability of a potential purchaser under this heading, the CC will have regard to the frequency and seriousness of any infringement, where and when any such infringement occurred and may also take account of any steps taken following any infringement to improve compliance with competition law.

[249] In relation to primary aggregates, competition concerns are very unlikely to arise where there is no overlap between the purchaser and the divested site within the catchment area around the divested site. Where there is such an overlap, competition concerns are unlikely to be found to arise where the acquisition of a divested site would result in a share of production of primary aggregates for the potential purchaser of less than 33 per cent in the catchment area around that site and in the catchment areas around any site owned by the potential purchaser located within the catchment area around the divested site.

(d) The CC will look closely at any ongoing links proposed between the JV partners and the purchaser to ensure that these were time-limited and essential to achieving an effective disposal. In particular, it is possible that some transitional management arrangements would be required, given that the divested operations have not previously been run as a stand-alone business (see paragraph 8.33). The CC would need to look carefully at the detail of any transitional management arrangements to ensure that they were no more extensive than needed to achieve an effective divestiture and, in any event, the CC would not be likely to approve any such arrangements with an expected duration of more than [✂].[250]

Upfront buyers

8.87 We considered whether it would be necessary for any or all of the divestitures to require the parties to identify a suitable purchaser that was contractually committed to the transaction (an upfront buyer), before the CC gave its final approval to the JV.[251] We further considered whether any divestiture for which an upfront buyer is needed should also be required to have completed before the CC gives its final approval to the JV. Our guidance on this issue states that:

> Where the CC is in doubt as to the viability or attractiveness to purchasers of proposed divestiture package (ie composition risk) or believes there may be only a limited pool of suitable purchasers (ie purchaser risk), it may require the merger parties to obtain a suitable purchaser that is contractually committed (for example through exchange of contracts subject to limited conditions) to the transaction before permitting a proposed merger to proceed or a completed merger to progress with integration. Where the CC considers that the competitive capability of the divestiture package may deteriorate pending the divestiture (ie asset risk) or completion of the divestiture may be prolonged, it may also require that the up-front buyer completes the acquisition before the merger may proceed or, in the case of a completed merger, before the merger parties may progress with integration.[252]

8.88 Our consideration of composition, purchaser and asset risks of the different divestiture proposals is set out in Appendix X.

8.89 We noted that the divestitures that would be required to address each SLC finding represent a relatively complex series of transactions with multiple potential purchasers and different risks associated with each transaction. During our investigation we were able to form an initial view about some of these risks, but we were not able to assess every possible risk. Overall we took the view that the risk of a hold-up to at least one divestiture was reasonably high. We concluded that the complexity of the overall divestiture process was an important consideration which argued in favour of requiring upfront buyer(s) to ensure that key divestitures and those which displayed particularly high divestitures risks were executed promptly.

8.90 We consider separately below the issues relating to the divestitures proposed to address unilateral effects concerns and to the proposed divestiture of cement and RMX operations to address our concerns about coordinated effects in cement.

---

[250] See also our comments on the possible proposal by the main parties to enter into a cement supply agreement for up to [✂] with the purchaser of the Hope cement works (see paragraph 8.34).
[251] For example, the contractual commitment could be through the exchange of contracts subject only to limited conditions.
[252] Merger Remedies Guidelines, paragraph 3.19.

- *Upfront buyer: Divestitures to address unilateral effects*

8.91 We set out in Appendix U our view that the individual assets to be divested by the main parties will be able to attract a similar level of interest as that obtained when some of these assets were pre-marketed during the OFT's first-stage investigation. As a consequence, we do not consider the general level of purchaser risk for these divestitures to be high.

8.92 However, as set out in paragraph 8.23, 8.29 and 8.30, a number of the proposed divestitures are either critical to the overall success of any solution to the SLCs that we have found, displayed specific risks, or both. For these reasons, we decided to require the main parties to obtain an upfront buyer that is contractually committed to acquiring the following divestitures, before the JV could proceed:

(a) Tarmac's stake in MQP;

(b) the following primary aggregates divestitures: Coxhoe, Holme Hall and the Ashbury rail depot;[253]

(c) the Cavenham asphalt plant; and

(d) any of the RMX sites listed in Appendix U, Table 11, if sold on a stand-alone basis.

8.93 We decided not to require an upfront buyer for the Briton Ferry, Potton and Willington primary aggregates divestitures and the Wivenhoe asphalt plant, as we judged the risks associated with these divestitures to be lower.

- *Upfront buyer: Divestitures to address coordinated effects in cement*

8.94 The divestiture of Hope cement plant along with supporting operations (including rail depots, the Dowlow quarry and a substantial RMX divestiture package) is central to the main parties' proposals to achieve a comprehensive solution to the SLCs that we have found. As set out in Appendix X there are significant composition and purchaser risks associated with the proposed divestiture package. This is a 'mix and match' package of cement and RMX operations which have not been run together as a stand-alone business. While there have been some expressions of interest in purchasing the Hope plant in the context of an earlier pre-marketing exercise—several potential purchasers told us about their reservations about acquiring Hope (see paragraph 8.59 and Appendix T). All of these factors strongly indicate the need for an upfront buyer for any cement/RMX divestiture based around the Hope plant.

8.95 We also considered whether to require that the buyer completes the acquisition before the JV could proceed (as opposed to, for example, exchanging contracts). In our judgement, there is a material risk that any cement/RMX divestiture could be prolonged or fail to materialize—if, for example, the potential purchasers currently identified decided not to pursue the acquisition. We would also expect a deterioration of the competitive capabilities of the divestiture package in such circumstances.

8.96 For these reasons, and given the importance of achieving an effective and timely solution to the SLC, we concluded that the main parties would need to complete any

[253] Dowlow is to be included as part of the divestiture to address the SLC arising from coordinated effects in cement. If this had not been the case, then an upfront buyer would also have been necessary for Dowlow.

divestiture of the divestiture package set out in paragraph 8.33 to a suitable purchaser before the CC would give its final approval to the JV.

Divestiture process

8.97 An effective divestiture process will protect the competitive potential of the divestiture package before disposal and will enable a suitable purchaser to be secured in an acceptable timescale. The process should also allow prospective purchasers to make an appropriately informed acquisition decision.[254]

8.98 In this particular case, we took the view that, in addition to the upfront buyer provisions discussed in paragraphs 8.87 to 8.96, an effective divestiture process would need to contain the following further elements:

(a) Timescale for divestiture. Based on the evidence received from third parties, we took the view that a period of around [✂] should be sufficient to achieve an effective disposal of all of the operations to be divested. Given the potential complexity of the overall divestiture package, and of the cement divestiture in particular, [✂]. Conversely a disposal period that was [✂] would start to raise concerns about the likely effectiveness of any divestiture process.

(b) Measures to protect the divestiture package. We took the view that the main parties should give undertakings to put in place appropriate interim management arrangements pending any divestiture, to restrict the exchange of confidential information between the main parties until the JV is allowed to conclude and to ensure that the competitive capabilities of the divested operations were not harmed during any divestiture period. We further concluded, in line with our guidance,[255] that a monitoring trustee should be appointed, at the main parties' expense, to monitor compliance with these undertakings and the steps being taken to ensure a prompt disposal.

(c) Provisions should be included in final undertakings for a divestiture trustee to be appointed should the main parties be allowed to complete the JV but then fail to achieve an effective disposal of the remaining operations by the end of the divestiture period. This is of relevance to any divestitures which take place after the JV has been allowed to conclude.

(d) While we would not require all divested operations to be sold to a single purchaser, the sales process should be structured in such a way as to enable potential purchasers of the cement divestiture package in paragraph 8.33 to bid for any of the other divestitures in so far as is practicable. This would give the purchaser of this package an opportunity to develop a portfolio of operations in support of its cement business.

Evaluation of effectiveness of possible remedies

8.99 In this section we consider the effectiveness of possible remedies:

(a) in paragraph 8.100, we consider the effectiveness of a full prohibition of the proposed JV.

---

[254] Merger Remedies Guidelines, paragraph 3.20.
[255] Merger Remedies Guidelines, paragraphs 3.21 & 3.23.

(b) in paragraph 8.101, we consider the effectiveness of possible divestiture remedies to address unilateral effects;

(c) in paragraphs 8.102 to 8.145 we consider the effectiveness of possible divestiture remedies to address coordinated effects in cement; and

(d) in paragraphs 8.146 and 8.147, we conclude our assessment and identify the effective remedy option that is least onerous, which constitutes our preferred remedy prior to consideration of RCBs.

Full prohibition

8.100 For the reasons set out in paragraphs 8.10 to 8.12, we concluded that a full prohibition of the JV would clearly be an effective remedy. As this would involve no change to the situation before the proposed JV, there would be no risk that it would not be effective.

Divestitures to address unilateral effects in primary aggregates, asphalt and RMX

8.101 For the reasons set out in paragraphs 8.13 to 8.30, we concluded that the proposed divestitures as summarized in paragraphs 8.16 and 8.17 are likely to be effective in remedying the SLCs we have identified, subject to the following amendment:

- the co-located RMX plant at Briton Ferry should be included in the Briton Ferry divestiture.

Divestitures to address coordinated effects in cement

8.102 We now evaluate the likely effectiveness of the proposed divestiture of cement, RMX and associated operations (see paragraphs 8.33 to 8.43) as a remedy to the SLC we identified as arising from coordinated effects in the bulk cement market.

8.103 It has been necessary to apply a degree of judgement in assessing the impact of this proposed divestiture. It does not involve a clear-cut disposal of either of the main parties' relevant operations—rather it involves the disposal of a combination of their operations that have not previously been operated together as a single business. Nor do we know at this stage who would purchase such a package, although we are able to specify the characteristics that would be required of a suitable purchaser (see paragraphs 8.82 to 8.86). More broadly, we have identified a number of risks associated with the proposed divestiture (see Appendix X), which although capable of being effectively managed (eg through upfront buyer requirements and an effective divestiture process), are also relevant.

8.104 In conducting our assessment, we have sought to compare the market situation that would prevail if the JV were allowed to proceed subject to this divestiture, against the counterfactual (which in this case is equivalent to the pre-JV situation, see Section 4). In doing so, we have applied the framework for evaluating coordinated effects set out in our guidance and drawn on our detailed analysis of the effects of the proposed JV on coordination as set out in paragraphs 6.203 to 6.264. The structure of our assessment of this issue is:

(a) In paragraphs 8.105 to 8.109, we provide an overview of the potential structure of cement and RMX markets, should the JV be permitted subject to the disposal of the proposed divestiture package. This includes an assessment of the likely level of vertical integration of each of the UK cement producers post-divestiture.

(b) In paragraphs 8.110 to 8.117, we consider the effect of allowing the JV to proceed subject to the proposed divestiture on the ability of UK cement producers to reach and monitor coordination (Condition 1).

(c) In paragraphs 8.118 to 8.128, we consider the effect of allowing the JV to proceed subject to the proposed divestiture on the internal sustainability of coordination, including incentives and ability to coordinate (Condition 2).

(d) In paragraphs 8.129 to 8.140, we consider the effect of allowing the JV to proceed subject to the proposed divestiture on the external sustainability of coordination (Condition 3).

(e) Finally, in paragraphs 8.141 to 8.145, we set out our overall conclusions on the effect of allowing the JV to proceed subject to the proposed divestiture on coordination and the extent to which the proposed divestiture may thus be expected to remedy the SLC that we have found.

Overview of possible market structure post-JV and proposed divestiture

8.105 We examined the effect of allowing the JV to proceed subject to the proposed divestiture on the likelihood and effectiveness of coordination by assessing its impact on the extent to which the three conditions for coordination (set out in paragraph 6.104) are met. As with our assessment of the effects of the JV as originally proposed in Section 6, our assessment of the potential market situation after divestiture was necessarily forward looking—we used the evidence and our analysis on the working of the market as a starting point and then considered how the incentives and abilities of market participants to coordinate would change. We based our assessment on our expectation that, to the extent possible, all of the RMX operations to be divested would be sold as part of the divestiture package to the acquirer of the Hope cement plant (see paragraph 8.72).

8.106 In doing so, we noted that compared with the counterfactual, if the JV were to go ahead subject to the proposed divestiture, there would be:

(a) No overall increase in concentration of the UK bulk cement market. As now, there would be four major UK-based cement producers and some competition from imports. The Hope cement plant to be divested is significantly larger than Tarmac's Tunstead plant. If the purchaser of the divestiture package runs Hope at its capacity, then concentration may be expected to decrease on some commonly-used indicators—for example, the three firm concentration ratio.

(b) Little overall change in terms of consolidation in RMX production at a UK level. The number of major RMX producers would be unchanged, as would be the combined RMX national share of supply of the four UK-based cement manufacturers and of the five largest RMX producers (ie including Aggregate Industries). Assuming that all the RMX offered by the main parties is divested to the purchaser of Hope (see paragraph 8.72), the JV entity following divestiture would have a UK share of RMX supply similar to that held by Lafarge today, and the purchaser of the divestiture package would have a [✂]. The only material change would be in the composition of the RMX operations of the JV entity post-divestiture and the purchaser of the divestiture package, as each would own a combination of Lafarge and Tarmac plants.

(c) No material change in similarity in the degree of vertical integration between the JV entity, Hanson and Cemex (compared with the present position of Lafarge). Compared with Tarmac today, the purchaser of the divested business would

have a somewhat lower ratio of cement use to production that, while higher than Cemex and Hanson, would make it somewhat more similar to these parties. This is partly because the purchaser of the divested business would operate a larger cement plant than Tarmac does.

8.107 An indication of likely impact on market structure in cement and RMX following the proposed JV and divestiture is summarized in Tables 15 and 16.[256]

TABLE 15 **Proportion of cement use and production in 2010 and estimated position after the proposed JV (with and without remedies), Great Britain cement producers**

	Per cent
Situation before the proposed JV	
Lafarge	[✂]
Hanson	[✂]
Tarmac	[✂]
Cemex	[✂]
Situation after the proposed JV with and without remedies	
JV entity (no remedies)	[✂]
JV entity (post remedies)	[✂]
Divested business (Hope + divested RMX)	[✂]

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

TABLE 16 **Shares of (all and bulk) cement sales in Great Britain and shares of Great Britain RMX sales in 2010 and estimated position after the proposed JV with and without remedies**

per cent

	Lafarge	*Tarmac*	*Hanson*	*Cemex*	*JV entity (no remedies)*	*JV entity (post-divestiture)*	*Divested business*
Bulk cement	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
All cement	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
RMX	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Bulk and all cement market shares based on CC calculations; RMX shares at a national level based on transaction data and BDS data.

8.108 We also considered what might happen to the existing patterns of cross-selling among UK cement producers if the JV were to take place subject to the proposed divestiture (see paragraphs 6.207 to 6.212).

8.109 The main parties submitted that the scale of the RMX divestiture implied that the JV entity post-divestiture (like Lafarge today) would produce significantly more cement than its internal needs and that it (like Lafarge today) would benefit from a good geographic footprint of cement production. In addition it told us that it would have a preference to supply its own RMX plants with cement, so as not to reveal intellectual property on its VAPs. As a consequence, the main parties told us that the JV entity could not be expected to require significant external purchases of cement. We noted in paragraph 6.212 that there was some uncertainty as to the likely effects of the proposed JV on cross-sales, absent any remedies. This uncertainty is compounded when considering the impact of any possible divestiture, not least because we do not know what approach to cross-sales will be taken by the purchaser of the proposed divestiture package. We will take this uncertainty into account when considering the overall effect on coordination of allowing the JV to proceed subject to the proposed divestiture.

[256] The figures relating to the situation post-JV are estimates based on 2010 production figures of the operations to be divested.

Effect of proposed divestiture on ability to reach and monitor coordinated outcome

8.110 In paragraphs 6.213 to 6.222 we found that the proposed JV would strengthen the ability to reach and to monitor coordination because:

(a) there would be fewer UK cement producers; and

(b) there would be increased information available to the JV entity compared with Lafarge's current position.

- *Number of cement producers*

8.111 If the JV were to proceed subject to the proposed divestiture, the number of major UK cement producers would remain unchanged at four and the number of major RMX suppliers would also remain unchanged at five. On this metric, the situation would therefore be the same as that in the counterfactual. This is in contrast to the situation absent remedies, in which the number of cement producers would decline from four to three and the number of major RMX suppliers would decline from five to four.

8.112 We also found (in paragraph 6.220) that following the proposed JV, monitoring would be likely to be easier and any inferences drawn from observing a reduction in sales would be more precise (eg distinguishing whether it was due to a deviation or a change in demand for cement). This is because, before the JV, Tarmac's independence and its incentive and ability to continue to expand output still introduced some additional uncertainty into the market which would be removed as a result of the JV.

8.113 Provided the acquirer of the divestiture business did not participate in any coordinating group (whether pre-existing, or newly formed), it might be expected to create a similar degree of uncertainty to Tarmac for any cement producers seeking to achieve a coordinated outcome. It is also conceivable that such uncertainty might increase following divestiture, at least in the short term, compared with the situation before the proposed JV. This is for two main reasons:

(a) First, the Hope plant has never been operated on a stand-alone basis and any purchaser of the divestiture package will not have a track record of operating a similar facility within the UK. The strategy of the new competitor may therefore, to some degree, be more uncertain than might otherwise be the case. The extent of such uncertainty may be affected by the identity of the purchaser of the divested business.

(b) Second, the acquirer of the divestiture package would operate a larger cement plant than Tarmac has done to date, such that any uncertainty about its strategic behaviour might potentially affect a larger share of the market.

- *Increased market information available to the JV entity*

8.114 In paragraphs 6.219 to 6.221, we set out our view that following the proposed JV, the JV entity would have access to more information on its cement competitors than Lafarge at present. In particular, the JV entity's increased vertical integration, which would result from combining Tarmac's strong position in RMX plants with Lafarge's large cement production, would allow more information on the RMX market to flow to the JV entity than Lafarge has access to at present.

8.115 Compared with the counterfactual, if the JV were to proceed subject to the proposed divestiture, the JV entity would have a similar size and extent of RMX network to Lafarge today (see Figures 2 and 3). As a consequence, this effect of the proposed JV is unlikely to arise to any material extent post-divestiture.

- *Conclusion on effect of divestiture on ability to reach and monitor coordination*

8.116 Compared with the counterfactual, the divestiture would maintain the situation before the proposed JV in terms of the number of major UK cement producers. Similarly, as a result of the scale and geographic scope of the RMX operations to be divested, the JV entity following divestitures is unlikely to have materially different information from its RMX operations than Lafarge does today about the actions of other UK cement producers.

8.117 We concluded that allowing the JV to proceed subject to the proposed divestiture was unlikely to make it materially easier to reach and/or monitor the terms of coordination in cement, whether such coordination was new or pre-existing.

Effect of proposed divestiture on internal sustainability

8.118 In assessing the impact of the proposed JV on internal sustainability (see paragraphs 6.223 to 6.251), we examined its likely effects on:

(a) the incentives to coordinate, ie the impact on the incentives of each individual producer to deviate from coordination. In this context, we looked at the effect of changes in the number of producers, changes in firms' structures (in terms of their costs and the degree of vertical integration); and changes in the pattern of cross-sales; and

(b) the ability of each cement producer to punish any deviation from coordination by others.

8.119 In paragraphs 8.120 to 8.128 below, we examine the impact of allowing the JV to proceed subject to the proposed divestiture on each of these effects and form a view on how this would affect internal stability relative to the counterfactual.

- *Number of producers*

8.120 In paragraph 6.224 we noted that following the JV as originally proposed, the cement and RMX output of Tarmac would be added to that of Lafarge. This would reduce the JV entity's incentives to deviate from any coordinated outcome compared with Lafarge today making coordination more likely, or any pre-existing coordination more stable.

8.121 By contrast, the proposed divestiture would have the effect of leaving the JV entity in a broadly similar position to Lafarge today, in terms of total cement output, and would leave the number of UK cement producers unchanged compared with the pre-merger situation. We therefore took the view that these effects of the JV were unlikely to arise to any material extent post-divestiture.

- *Structural similarities—costs and vertical integration*

8.122 In paragraphs 6.226 and 6.227, we noted that following the proposed JV, the level of the JV entity's average variable production costs would have greater similarities to

those of Hanson and Cemex than either Tarmac or Lafarge's costs have at present. In light of our assessment of the data and information we had on the costs of cement plants, including our specific consideration of Hope and Tunstead in Appendix V, we took the view that these effects of the JV were unlikely to arise to any material extent post-divestiture.

8.123 In paragraph 6.228, we noted that, absent remedies, the JV entity would have a larger RMX business than Lafarge currently has, and this would make its vertically integrated position closer to that of Cemex and Hanson. For the reasons set out in paragraphs 6.228 to 6.242, we concluded that this increase in vertical integration of the JV entity compared with Lafarge would have a number of effects which were likely to increase the internal sustainability of coordination.

8.124 By contrast, following the proposed divestiture, the JV entity would have a similar level of vertical integration to Lafarge today, such that these effects of the JV were unlikely to arise to any material extent post-divestiture. We discuss the level of vertical integration of the purchaser of the divestiture package in paragraphs 8.129 to 8.140.

- *Increased ability to signal before more costly punishing*

8.125 In paragraph 6.243, we noted that if the JV entity were to have greater cross-sales with Hanson and Cemex than Lafarge does currently then it would have an enhanced ability compared with Lafarge to use repatriation as a cheap signal to deviators from any coordinated outcome. We noted the submissions by the main parties in paragraph 8.109. In light of our conclusion in paragraph 8.124 as to the similarity of the JV entity following the proposed divestiture to Lafarge today, we took the view that these effects of the JV were unlikely to arise to any material extent post-divestiture.

- *Increased effectiveness of punishment mechanisms*

8.126 In paragraphs 6.245 to 6.249, we noted various ways in which the JV entity as originally proposed would be better placed to spot and punish deviations than Lafarge is at present.

8.127 In light of our conclusions in paragraphs 8.115 and 8.124, we took the view that these effects of the JV were unlikely to arise to any material extent post-divestiture.

- *Conclusion on effect of divestiture on internal sustainability*

8.128 For the reasons set out in paragraphs 8.118 to 8.127, we concluded that allowing the JV to proceed subject to the divestiture was unlikely to result in a material increase in the internal sustainability of coordination, whether such coordination was new or pre-existing.

Effect of proposed divestiture on external sustainability

8.129 The proposed divestiture would replace Tarmac with another independent cement producer. But the divested business will have different characteristics to those of Tarmac, as its cement operations will be based around Lafarge's Hope cement plant and its RMX network will comprise a combination of Tarmac and Lafarge plants. Compared with Tarmac, the divested business would:

(a) have around [✂] per cent more cement capacity ([✂]Mt at Hope, relative to Tarmac's capacity at Tunstead of around [✂]Mt);

(b) have more limited scope for capacity expansion over the medium term, given the planning and reserve constraints around the Hope site;

(c) appear to have [✂] variable production costs, on the basis of the evidence we have seen—see Appendix V; and

(d) have a broadly similar scale and extent of RMX operations.

8.130 We first consider the effect of this change on the external sustainability of coordination, assuming that there is no pre-existing coordination.

8.131 In paragraph 6.253, we found that it was likely that Tarmac:

(a) did not, at present, have the same incentives to coordinate as the other major UK cement producers;

(b) was likely (if there were a degree of pre-existing coordination) to be part of a competitive fringe; and

(c) could not expand its sales further in the short term, given that it currently produces at, or close to, full capacity. We noted, however, that in the longer term Tarmac could use its existing planning permission to increase the capacity of its Tunstead plant.

8.132 The JV would remove Tarmac as an independent competitor, likely to stay outside any potential coordinating group and as a long-term potential threat to any possible coordination (see paragraph 6.254).

8.133 We consider the potential incentives of the purchaser of the proposed divestiture package to coordinate in paragraphs 8.135 to 8.140. Assuming that the acquirer of the proposed divestiture package did not form part of any potential coordinating group, then it might be expected that, compared with the situation before the proposed JV:

(a) the size of any competitive fringe could increase in the short term, if the acquirer of the proposed divestiture package produced at or near the capacity of the Hope plant. This would tend to increase the extent of external constraints on any coordinating group; and

(b) the longer-term potential threat of Tarmac expanding its Tunstead operations would have been removed, though on the other hand there would be some uncertainty about how the new company would seek to develop its business over a longer time horizon.

8.134 It is difficult to evaluate precisely how these factors would play out in practice. On balance we took the view that, if there was no pre-existing coordination, the effect of allowing the JV to proceed (subject to the proposed divestiture) on the external sustainability of any future coordination would be small, compared with the current situation.

8.135 If, by contrast, there was pre-existing coordination then we found that it was likely that Tarmac was not a member of any coordinating group (see paragraph 8.131).

8.136 If the JV were to proceed subject to the proposed divestiture, much would depend on how the JV entity, Cemex and Hanson viewed the new provider and, in particular, whether they chose to accommodate the entrant or responded aggressively to any attempt by the entrant to produce at Hope's full capacity. The fact that Hope is larger than Tunstead might increase the incentive on existing members of any coordinating group to seek to prevent the entrant from operating at full capacity (for example, by selectively undercutting the entrant). The appetite of the acquirer of the divestiture package for attempting to run Hope at full capacity is uncertain and may be affected by its identity as well as its perception of the likely response from the other UK cement producers.

8.137 We noted that the terms on which the new owner of the divested business acquires the divestiture package might influence the JV entity's subsequent behaviour. For example, if the new owner had paid a low price for the divestiture package, the JV entity might be less likely to accommodate any reduction in its market share that would arise if the purchaser sought to operate Hope at, or near to, its full capacity.

8.138 In our view, a possible outcome is that the JV entity would reduce its own output to accommodate the new entrant, and that the consequent ability of the new owner of Hope to operate as a member of the competitive fringe (in particular, operating at full capacity and selling at the prevailing market price) might be reflected in the price realized for the sale of Hope. In this case the new entrant's behaviour would have little or no effect on Hanson or Cemex, and therefore there would be a low probability of any coordination being disrupted.

8.139 However, it is also possible that an acquirer of the proposed divestiture package could participate in a coordinating group. We have found that Tarmac does not currently have the same incentives to coordinate as other major UK cement producers (see paragraph 8.131). A new owner of any divested business might be more likely to participate in any coordination in cement than Tarmac is today, for the following reasons:

(a) Compared with Tarmac, the vertical structure of the proposed divestiture package is somewhat more similar to that of Cemex and Hanson—see Table 15. As a consequence, the incentives and abilities of the acquirer of this package might be somewhat more closely aligned with those of other UK cement manufacturers than Tarmac's are today. However, the acquirer of the proposed divestiture package would have a significantly higher ratio of cement use to production than Cemex and Hanson and a very different vertical structure to the JV entity post-divestiture.

(b) Compared with Tarmac, the divested business is also potentially somewhat more vulnerable to 'punishment' by the other majors through action in the external cement market, as it would be more dependent on external cement sales. This might make it more likely to go along with prevailing behaviour to reduce the likelihood of any punishment phase. This risk is substantially reduced by the inclusion of a large RMX network in the divestiture package.

(c) The purchaser of the divestiture package, depending on its identity, might have wider contacts and relationships with the other major UK cement producers. As part of our assessment of purchaser suitability, we would therefore need to look closely at existing links and other commercial interactions between potential purchasers and the existing UK cement producers, as well as any evidence of cartel activity or any other infringement of Article 101(1) TFEU or equivalent prohibitions (see paragraph 8.86).

(d) The JV entity will have extensive knowledge of the divested business and of its existing cement customers (at the point of the divestiture). This knowledge might make the divested business more vulnerable—for example, the JV entity will have established contacts with all the initial external customers of the divested business and that could make it easier for the JV entity to persuade them to switch their business back to it. This risk is substantially reduced by the inclusion of a large RMX network in the divestiture package. We also noted that potential purchasers may seek to reduce their exposure to this risk further when negotiating the terms of any acquisition. In line with its normal practice, the CC would wish to review the terms of any sale and purchase agreement before giving its final approval to the divestiture.

8.140 The main parties told us that single plant operators typically had strong commercial incentives to operate at full capacity, whereas multi-plant operators had a wider set of objectives, including the optimization of capacity across a network of plants. The main parties also submitted that any purchaser would be more likely than Tarmac to act as a disruptive influence. According to the main parties, this was partly because the purchaser of the divestiture package would be 'long in cement' and would therefore need to actively seek the business of independent RMX producers in order to produce at Hope's full capacity and hence maximize its profits.

- *Conclusion on effect of divestiture on external sustainability*

8.141 The proposed divestiture would replace Tarmac with a competitor with different characteristics from Tarmac in terms of key competitive variables such as size of plant, prospects for future expansion and, to some degree, the extent of its vertical integration. Some of these factors—in particular the size of the cement plant—might increase, relative to Tarmac, the external constraint posed by the new competitor on any coordinating group. Other factors—including the absence of scope for plant expansion in the medium to long term—might reduce the strength of any such constraint. The competitive conditions that result from the replacement of Tarmac will depend on a variety of factors that are difficult to predict with certainty, including the strategies of the JV entity, Cemex, Hanson and the acquirer of the divested business.

8.142 There is also a risk that the acquirer of the divested business might, at some stage, participate in a current or future coordinating group (see paragraph 8.139). In our judgement, this risk has been substantially reduced by the design of the divestiture package, in particular, because the divestiture of a large volume of RMX capacity will ensure that a large proportion of the new company's cement output will be absorbed by its downstream RMX business. As with Tarmac today, this should encourage the new company to operate its cement plant at a high level of capacity. The CC's oversight of the divestiture process, including scrutiny of potential purchasers, should also reduce this risk.

o *Effect of proposed divestiture on coordination*

8.143 The proposed divestiture would address our key concerns about the impact of the JV as originally proposed on coordination in the UK bulk cement market. In particular, the divestiture would remove the concerns that result from the reduction in the number of UK cement producers from four to three and from the increased similarity in terms of vertical integration, between the JV entity, Cemex and Hanson.

8.144 However, the proposed divestiture does involve some risks. Many of these (including the risks summarized in Appendix X) arise to some degree in any divestiture and are generally capable of being effectively managed through careful design and imple-

mentation. Against these risks is the fact that the divestiture package includes a larger cement plant than the Tarmac plant that is being contributed to the JV. This, combined with the strategic uncertainty associated with the entry of a new player into the UK cement market, has some potential to undermine coordinated behaviour.

8.145 We concluded that the proposed divestiture was of sufficient scale and scope to effectively restore the essential characteristics of the market structure in cement and RMX before the proposed JV. The competitive conditions that result from allowing the proposed JV to proceed subject to the proposed divestiture will depend on a variety of factors that are difficult to predict with certainty. There are possible scenarios in which the divestiture might result in a more competitive situation than the counterfactual, and other possible scenarios in which it might result in a less competitive situation. On balance, and in light of our detailed consideration (in paragraphs 8.102 to 8.141) of the impact of the proposed divestiture on the three conditions for coordination, we concluded that allowing the proposed JV to proceed subject to the proposed divestiture was unlikely to result in a material change in the susceptibility of the UK bulk cement market to coordination relative to the counterfactual. Subject to the necessary safeguards regarding implementation set out in paragraphs 8.80 to 8.98, we further concluded that the risks associated with the proposed divestiture were also acceptable. Consequently, we concluded that the proposed divestiture would be an effective remedy.

Conclusion on effectiveness of possible remedies

8.146 We concluded that the following remedies would be effective:

(a) full prohibition of the JV. This would be effective in remedying all SLCs that we have identified; and

(b) the following package of divestiture remedies:

(i) divestiture of primary aggregates, asphalt and RMX operations, as summarized paragraph 8.17 (as amended in paragraph 8.101) would be effective in remedying the SLCs that result from unilateral effects, subject to the necessary safeguards regarding implementation set out in paragraphs 8.80 to 8.98; and

(ii) divestiture of the package of cement, RMX and other associated operations, as summarized in paragraph 8.33 would be effective in remedying the SLCs that result from coordinated effects in bulk cement, subject to the necessary safeguards regarding implementation set out in paragraphs 8.80 to 8.98.

8.147 Of these remedy options, we judge that the combination of divestitures summarized in paragraph 8.146(b) represents a less onerous solution than full prohibition of the proposed JV to the SLCs that we have found. This is because the divestitures would enable the main parties to achieve some of their objectives for the proposed JV, while effectively addressing our concerns. We concluded that this would be a more proportionate solution than full prohibition. It was therefore our preferred solution, prior to consideration of RCBs.

Relevant customer benefits

8.148 We assessed RCBs within the framework of the Act. RCBs are effects such as lower prices, higher quality or greater choice of goods or services or greater innovation which are expected to accrue from a merger and would be unlikely to accrue without

the merger (or a similar lessening of competition). We describe them (and the statutory framework) in more detail in Appendix Y.

8.149 Our guidance states that the main parties are 'expected to provide convincing evidence regarding the nature and scale of relevant customer benefits that they claim to result from the merger and to demonstrate that these fall within the Act's definition of such benefits'.[257]

8.150 In this case the main parties proposed that there were two main customer benefits that would occur on account of the proposed JV:[258]

(a) Greater efficiency: annual synergies and logistics savings of £[✂] are variable cost savings which will make the JV entity more competitive in each of the relevant markets and are efficiencies most capable of being passed on to customers, and will therefore benefit customers; and

(b) VAPs: the proposed JV provides Lafarge with access to Tarmac's more extensive network of RMX sites to introduce and sell its RMX VAPs to Tarmac's RMX customers, thereby increasing their choice of innovative products and/or reducing their construction costs.

8.151 In relation to whether greater efficiency was an RCB, the main parties provided no convincing evidence to suggest that any procurement or logistics cost savings arising from the proposed JV would be passed on to customers in the form of lower prices, nor that these would lead to higher quality or greater choice for customers, or result in greater innovation (see paragraph 6.275). Instead, all of the evidence from the main parties' internal documents showed that all of the synergy benefits arising from the proposed JV were expected to enhance the value of each shareholder's stake in the JV entity. [✂]

8.152 We therefore concluded that these procurement and logistics savings were not an RCB, though we noted that the main parties would have the opportunity to achieve at least some of these savings under our preferred remedy.

8.153 Based on our review of the main parties' internal documents, we noted that increasing the penetration of VAP sales under the proposed JV appeared to be an important strategy, in particular given Lafarge's VAP penetration of RMX volumes of [✂] per cent (or VAP sales volumes of [✂] m^3) was [✂] higher than Tarmac's of [✂] per cent (or [✂] m^3), and the relatively higher price and margins associated with VAPs. Based on the main parties' evidence, Tarmac's lower VAP penetration appeared partly driven by Lafarge's significantly more advanced Research and Development (R&D) capabilities compared with Tarmac's, and also partly by Tarmac providing inadequate technical support to customers when launching its own VAPs.

8.154 Lafarge and Tarmac each appear to have a similar number of branded VAPs in RMX (between five and seven) and it is unclear as to the extent to which the properties marketed by each main party for its own VAPs significantly overlap, eg both offer low carbon concrete, self-compacting concrete and coloured concrete. However, we recognized the potential that Lafarge's relatively greater R&D, sales and marketing expertise in VAPs over Tarmac's may in the future enhance the range and penetration of the JV entity's VAP offerings. At this stage, we considered that any increase in VAP penetration under the proposed JV would result in Tarmac's RMX customers benefiting from a greater choice of more innovative products and

[257] Merger Remedies Guidelines, paragraph 1.17.
[258] Main parties' response to the provisional findings, paragraph 4.4.1.

potentially deriving value from their use (eg lower construction costs), and therefore increased VAP penetration was an RCB. However, we have not been able to conclude on the extent to which this benefit might have arisen absent the proposed JV and how this compares with the situation under the proposed JV (see paragraph 8.156 below).

8.155 In relation to quantifying the VAP benefit, the main parties estimated that the annual benefit on an EBITDA basis to the JV entity of increased VAP penetration was around £[✂]. These represent synergy benefits to the JV entity and therefore cannot be treated as an estimate of the potential benefit to customers. We took the view that the likely scale of any benefits to customers was likely to be of a lower order of magnitude to the main parties' estimates of the annual benefits of increased VAP sales.

8.156 We considered whether the potential loss of any RCBs associated with increased penetration of VAPs should influence our choice of remedy. Such benefits would not be retained under a full prohibition, though some might be retained under a divestiture remedy.

8.157 In our judgement, and given the overall size and importance of the UK cement market and the nature of the SLC that we have found, such relatively modest customer gains, while valuable in themselves, are unlikely to outweigh the potential harm associated with the SLC in cement and the benefits of achieving an effective remedy to that SLC.

8.158 Moreover, we had some doubts about the extent to which the proposed JV was necessary to achieve increased penetration of VAP products for the following reasons:

(a) Tarmac had invested in R&D in the past on its VAPs and already markets and sells its own range of VAPs in RMX, some of which advertise properties and benefits which are similar (but possibly not identical) to Lafarge's VAP offering, eg coloured concrete and self-flowing concrete.

(b) Whilst Tarmac had experienced less successful launches of VAPs and VAP penetration rates in the past when compared with Lafarge, it is unlikely that absent the proposed JV, Tarmac would have abandoned all future attempts at increasing its VAP penetration or expanding the range of its VAP offering, in particular given: (i) the relatively high prices and margins of VAPs when compared with 'conventional' products; (ii) its competitors, including all of the other majors (all of which invest in R&D in VAPs) and some independent RMX producers, currently offer their customers VAPs; and (iii) the widely-held view by the other majors that competitors could replicate the properties and benefits of their VAPs without investing too heavily into new R&D.[259]

(c) Tarmac already owns an extensive network of RMX sites across the UK to market and distribute its VAPs, for which current penetration of its RMX VAPs is relatively low. We considered it unlikely that any opportunity to increase profitability by increasing VAP penetration from a relatively low starting point would be unique to the proposed JV.

[259] In this context, we noted that while it appeared that Lafarge had a strong position in the market in relation to VAPs, its VAP range overlapped to a certain extent with that of the other UK majors and certain independent RMX producers. We were told that chemical companies developed admixtures (such as plasticizers, waterproofing agents and corrosion inhibitors) which they placed on the general market, and which would enable any RMX producer to develop certain types of VAPs.

8.159 As a result we concluded that the potential loss of any RCBs associated with increased penetration of VAPs was unlikely to be sufficiently material to affect our choice of remedy. Nevertheless, we noted that in selecting RMX sites to be retained by the JV entity, the main parties selected sites that were most suitable for producing VAPs (see paragraph 8.73). This suggests that that our preferred remedy may allow some of the potential benefits associated with increased penetration of VAPs to be retained.

8.160 We therefore decided not to modify our preferred remedy to take account of RCBs.

Remedies decision

8.161 We have decided to require the main parties to implement the following divestitures, as a condition for allowing the proposed JV to proceed:

(a) divestiture of primary aggregates, asphalt and RMX operations, as summarized in paragraph 8.17 (subject to the amendment in paragraph 8.101); and

(b) divestiture of the package of cement, RMX and other operations, as summarized in paragraph 8.33.

8.162 Our expectation is that, to the extent possible, all of the RMX sites to be divested would be sold as part of the divestiture in 8.161(b). In the remedies implementation stage, the CC would be prepared to consider a limited number of these sites being divested to another purchaser. However, the CC would need to be satisfied that this was necessary to achieve an effective disposal, did not compromise the remedy's effectiveness and did not reduce the overall volumes of RMX to be divested from the JV entity.

8.163 The implementation of these divestitures would be subject to the safeguards set out in paragraphs 8.80 to 8.98. In particular:

(a) the CC will wish to satisfy itself of the suitability of potential purchasers for all divestitures (see paragraphs 8.82 to 8.86);

(b) the main parties will be required to complete the divestiture of cement, RMX and other operations before the CC would give its final approval to the proposed JV (see paragraph 8.96);

(c) the main parties will be required to come to an arrangement with a suitable purchaser, such that the purchaser is contractually committed to acquiring the divestitures in paragraph 8.92 before the CC gives its final approval to the proposed JV;

(d) the main parties will be required to give undertakings to put in place appropriate interim management arrangements pending any divestiture, to restrict the exchange of confidential information between the main parties until the JV transaction is allowed to conclude and to ensure that the competitive capabilities of the divested operations were not harmed during the divestiture period. A monitoring trustee should be appointed, at the main parties' expense, to monitor compliance with these undertakings and the steps being taken to ensure a prompt disposal (see paragraph 8.98); and

(e) provisions will be included in final undertakings for a divestiture trustee to be appointed should the main parties be allowed to complete the JV but then fail to achieve an effective disposal of the remaining operations by the end of an initial

divestiture period of [✂]. This is of relevance to any divestitures which take place after the JV has been allowed to conclude (see paragraph 8.98).

8.164 In our judgement, this package of measures represents as comprehensive a solution as is reasonable and practicable to the SLCs arising from the proposed JV.