**Proposed extraction of sand and gravel with restoration to grazing land and recreation using imported inert restoration materials, the erection of associated plant and infrastructure and the creation of a new footpath and an access onto Hamble Lane**

**Former Hamble Airfield, Hamble Lane, Hamble-le-Rice, SO31 4NL**

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# VOLUME 2 – ENVIRONMENTAL STATEMENT

Submitted to:
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# 1. INTRODUCTION

1.1. The Environmental Statement and its associated Non-Technical Summary have been prepared by CEMEX UK Operations Limited (the Applicant) and the project team as set out in Chapter 5, in support of the Applicant's planning application for the following development:

*Proposed extraction of sand and gravel with restoration to grazing land and recreation using imported inert restoration materials, the erection of associated plant and infrastructure, the creation of a new footpath and an access onto Hamble Lane*

1.2. This Environmental Statement supports the planning application submitted as Volume 1. The Technical Appendices to support the various chapters are at the end of this Volume. Volume 3 comprises the Non-Technical Summary of this Environmental Statement.

**Site Description**

1.3. The application site is a former airfield, located in the village of Hamble, within the county of Hampshire and borough of Eastleigh. The site borders Hamble Lane to the west, Satchell Lane to the east, the railway line to the north, and various residential roads and the Roy Underdown Pavilion and green to the south. Hamble station lies to the north-west corner.

1.4. The site comprises open land which is private property, however despite this it is used by local residents for recreation. The site is generally flat and covered with scrub vegetation, with some mature trees and hedgerows on the boundaries, particularly to the west and north.

1.5. The nearest residential properties to the site are those in Hamble Lane, Satchell Lane and those to the south of the site. There are two schools in close proximity which are Hamble Community College to the north of the site, and Hamble

Primary to the south-west along Hamble Lane. There is an Esso pipeline running along the eastern side of the site outside the proposed extraction area, and a footpath around the edge of the site where the pipeline lies is proposed to be installed at the start of the development, for use by the public.

1.6. There are no landscape or ecological designations covering the site. The nearest ecological designations are the Badnam Copse Site of Importance for Nature Conservation which adjoins the site boundary to the north-east, the Solent and Southampton Water Ramsar Site, Lincegrove and Hackett's Marshes SSSI, Solent Maritime Special Area of Conservation and Solent and Southampton Water SPA, which are all located approximately 300m to the east of the site adjacent to the River Hamble. The SPA, SAC and Lee-on-Solent to Itchen Estuary SSSI also continues along the coast, approximately 900m to the south-west of the site.

1.7. In terms of historical designations, the Grade II listed Royal Victoria Country Park is located approximately 250m to the west of the site. There are a number of listed buildings to the west, south-west and south-east, however all are over 500m from the site boundary.

1.8. There is a public footpath (no 1) running behind the residential properties along the eastern boundary of the site (southern half). There is also a path along the south-western side of the site.

1.9. The accompanying Geological Report at Volume 1 Appendix 4 describes the local geology of the proposed extraction area as being underlain by River Terrace deposits comprising sands and gravels, overlying the Marsh Farm Formation, comprising clay, silt and sand, and the Earnley Sand Formation, comprising sand, silt and clay. The estimated average percentages across the site for the various sizes are 52.5% gravel, 37.6% sand and 9.9% fines.

# 2. THE PROPOSAL

## Overview

2.1. The proposed development is for the extraction of approximately 1.7million tonnes (mt) of sand and gravel at a rate of approximately 250,000 tonnes per annum (tpa), and as such extraction is likely to last up to 7 years. The site will be progressively restored using in situ soils and overburden from the site, together with imported inert restoration materials, of which around 1.8mt will be required in total. The imported inert restoration materials will be imported at a rate of 150,000tpa whilst extraction is ongoing, increasing to 250,000tpa once extraction has ceased. It is estimated that infilling would take a further 6 years approximately with a further year to finalise planting once importation has ceased.

2.2. The site would be worked in 7 phases, with the first phase being at the northern end of the site. Phase 1 would be used for freshwater and silt lagoons once extraction is complete, with the overburden used to create noise and visual screening bunds around the edges of the site. Phase 2 is south of the plant site on the western side, and the site would be worked in an anti-clockwise motion, ending with the plant site area, which would be the final phase 7.

2.3. A new access to the site would be created from Hamble Lane. The location of the access has been carefully chosen to be the safest location and to have the least impact on surrounding trees. The access would be designed such that all vehicles would arrive from and depart to the north of the site.

2.4. The plant site would include an aggregate processing plant, stocking conveyor, water treatment plant, double weighbridge and weighbridge office, site offices/welfare units, wheelwash, car parking area, cycle parking and overnight parking area. A conveyor would be used to bring the material from the extraction areas back to the processing plant, other than for Phase 1 whilst site set up is ongoing, which would be brought back to the plant site by dumper truck.

2.5. No dewatering will occur and the deposit will be worked dry or wet, depending on the water table level. There may be some pumping of rainwater or groundwater at the excavation face to locations within the site, without any off-site discharge.

2.6. The restoration is proposed to be to parkland and grazing land, with two small ponds for drainage. The parkland area will be open for public access and the remainder of the site for grazing. There will be new native hedgerows, scrub, and woodland also proposed, with existing boundary vegetation remaining and being enhanced.

2.7. The hours of operation are proposed to be 0700-1700 hours Monday to Friday and 0700-1200 hours on Saturdays. Soil stripping and sand extraction is not proposed to commence until 0800 hours. Maintenance of plant and vehicles is proposed to be allowed until 1800 hours on Saturdays and 1900 hours in the week.

2.8. It is estimated that there would be an average of 45 loads of aggregate leaving the site per day (90 movements) based on five and a half days per week working from year 1 - year 7. There would be around 27 loads (54 movements) of inert restoration materials imported to the site per day from year 3– year 7 and once extraction has ceased, from year 8 this would increase to 45 loads (90 movements) per day of imported restoration materials.

2.9. It is proposed to put in a permissive footpath at the start of the development, from the south-east corner to the north-west corner, which would connect the houses on Satchell Lane to Hamble station and the Hamble School and sports complex. The path would have several entrance/exit points around the site, as shown on the Landscape Layout Operational Phase Plan. This would also enable walkers to access the Hamble Rail Walking Trail on the opposite side of Hamble Lane and connect with surrounding footpaths. The proposed path would be on the outside of the bunds and a fence would separate the path from the bunds and quarry beyond. The path is intended to remain in the long-term, for the duration of mineral working and infilling, and once working has been completed at the site.

**Phasing and soil movements**

2.10. The site would be worked in seven phases, starting from the northern end of the site. Before mineral working commences, a number of operations will take place. The preliminary phase of the operations would involve firstly clearing the location for the site access for reptiles (see Environmental Statement appendix 4.7) and during a seasonable period when conditions are suitable to move soils, creating the site access, installing the tree protection fencing and reptile fencing. Then Phases 1-3, the plant site and bund locations will be cleared of reptiles, which will be moved to the receptor area within the site, and any checks/further surveys necessary for ecological purposes will be carried out. Once the area is clear, the haul road would be constructed and the soils would be stripped for Phase 1 and the plant site and placed around the site creating the bunds on all sides.

2.11. The heights of the bunds would be as shown on the Phasing Overview plan and would be between 3m and 5m in height. Topsoils would be stored at 3m high and higher bunds would be subsoils with a small layer of topsoil placed over them, in order that the bunds can be seeded. The topsoils and subsoils would be separated with membranes. The bunds will be seeded with a low maintenance grass seed mix or neutral grassland wildflower mix. This will be done during the optimum months for seeding where possible, or mild and damp conditions if not.

2.12. The mineral from Phase 1 would then be extracted and brought to the plant site by dumper truck. Some of the mineral from Phase 1 would be used to surcharge the plant site back to ground level, following soils removal. Phase 1 would then be used as a silt pond and freshwater pond for the remainder of the working of the site. The plant site would be set up and Phase 1 mineral processed. Meanwhile, the footpath around the outside of the site would also be created once the bunds and tree protection are in place.

2.13. Phase 2 would then be soil stripped and extracted, with the mineral brought back to the plant site by conveyor. A temporary overburden stockpile would be placed within the phase, and the soils from the stockpile would then be used to restore this phase, as well as inert restoration materials which would begin to be imported once the mineral from Phase 2 had been extracted. Phase 3 would then be extracted and processed in the same way, with a temporary stockpile of overburden used to restore Phases 2 and 3, along with the imported restoration materials.

2.14. Working and progressive restoration would then continue in a circular motion and the final phase would be Phase 7 which is the plant site. At the same time, reptiles would be cleared from the next phase as the site is worked, and moved into the receptor area, which would also change as the extraction progresses (see Vol 2 Appendix 4.7). It is likely that material from the plant site (final phase) would not be processed on site as the plant would be dismantled, and instead and would be exported as-raised. Once extraction is complete, the perimeter bunds would be dismantled and used to restore the plant site and Phase 1 would be restored. Once importation has ceased, it is estimated that a further year would be required to finalise planting across the site. The site access would remain in situ upon restoration for access to the site.

2.15. In terms of machinery, the temporary operations of bund formation would involve an excavator, dump truck and bulldozer. The routine mineral extraction operations would involve an excavator and loading shovel at the face of the mineral, and hopper to feed the conveyors. The machinery required at the plant site is shown on the Plant Site Area plan and includes a processing plant to screen and wash the mineral, a radial stocking conveyor, water treatment plant, two weighbridges and a wheelwash.

2.16. Silt from the excavation would be disposed of in the silt lagoons shown on the Phasing Overview plan and Method of Working plans. The silt would be pumped from the processing plant to the lagoons via a pipeline, and water from the freshwater pond pumped back to the plant for aggregate washing, meaning that around 95% of the water on site is recycled with minimal consumption or losses. The maximum depth of the excavation would be around 7m, with the average depth around 4.5m. Silt is on average 10% of the mineral, as identified by the trial boreholes.

**Restoration and Aftercare**

2.17. The Applicant's quarrying activities are restoration-led, and mineral extraction only ever takes place where there are restoration proposals in place first, for the final landform and its after-use. The restoration scheme for the site has been designed with the dual objectives of establishing land uses which are appropriate to this landscape, and also creating new features and habitats of biodiversity value, and of value to the species found in and around the site, contributing to the objectives of the UK, Local and CEMEX's own Biodiversity Action Plans. CEMEX is a member of the Mineral Products Association (MPA) and therefore the site would benefit from the protection offered by the MPA Restoration Guarantee Fund.

2.18. The restoration proposals have been informed by the ecology surveys, local planning policy and biodiversity priorities, and the restoration proposals intend to increase biodiversity net gain, whilst formalising some permissive public access to the site. Importing fill will allow the site to be restored to existing ground levels for the majority of the site, with some existing naturally lower areas to remain as water for drainage purposes. Restoration will be progressive, however the rate at which restoration is completed will depend on the amount of inert restoration materials that can be brought to the site for restoration purposes. It is estimated that it would take a further six years approximately after cessation of mineral extraction to complete restoration.

2.19. The site is proposed to be restored to a mixture of lowland acid grassland, lowland mixed deciduous woodland and mixed scrub with some smaller areas comprising shallow drainage ponds and fens. It would also comprise over 1km of additional native hedgerow and over 20,000 trees and shrubs would be planted. The north-eastern corner of the site would be restored to an area for community access, with a hedge separating it from the rest of the site. Trees would be planted in this area and the grassland would be managed by cutting.

2.20. The remaining northern half of the site would be restored to dry acid grassland with new field edge woodland and scrub blocks, and is aimed to be managed by infrequent grazing. The southern part of the site would also be restored to grassland and grazing land, with habitat particularly for reptiles and ground nesting birds, managed by regular grazing. Retained and new planting would help to screen existing properties.

2.21. As well as the permissive public access created in the northern corner, the footpath from the south-eastern corner adjoining Satchell Lane would remain and be extended to further south along Hamble Lane, just north of no 108.

2.22. The applicants will be responsible for the initial restoration and subsequent after-care management in consultation with the Mineral Planning Authority. The Restoration and Landscaping Details (see Volume 2 Appendix 3.2) have also been submitted to accompany the working scheme and restoration plans. This explains how the created habitats will be maintained in the short and long term, and includes the restoration aims and management objectives, timing of works for the soil operations and planting.

2.23. The Applicant proposes a 5-year aftercare period for each phase of the development. The submitted aftercare scheme shows an example of a 5-year period however a more detailed scheme can be submitted by condition or pursuant to a S106 legal agreement.

2.24. The new access to the site will remain in the long term for site maintenance purposes.

# 3. ENVIRONMENTAL ASSESSMENT REGULATIONS AND SCOPE OF THE ASSESSMENT

3.1. The process of Environmental Impact Assessment (EIA) in the context of town and country planning in England is governed by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. These regulations apply the amended EU EIA Directive to the planning system in England. Subject to certain transitional arrangements as set out in regulation 76, the 2017 regulations revoke the Town and Country Planning (Environmental Impact Assessment) Regulations 2011.

3.2. The purpose of EIA is to protect the environment, by ensuring that a local planning authority has full knowledge of the likely significant effects on the environment, when deciding whether or not to grant permission for a development. The aim of the Environmental Impact Assessment process is also to ensure that the public are given effective opportunities to participate in the decision- making procedures.

3.3. Schedule 1 and Schedule 2 of the 2017 Regulations set out whether a development is likely to need an EIA. This development falls within Schedule 1 as it is a quarry with a surface exceeding 25ha.

3.4. The Applicant is therefore required to carry out an Environmental Impact Assessment (EIA) and submit with the planning application an Environmental Statement (ES) explaining any significant environmental effects arising from the development, and the mitigation measures proposed to deal with these. This is a professionally objective process involving a team of specialist consultants employed by the Applicant to provide independent professional advice. The chapters of this ES and accompanying technical appendices have been written by the various consultants as set out in Chapter 5, which includes a summary of their experience and professional qualifications.

3.5. The EIA process is designed to identify any potential adverse environmental impacts and if appropriate, recommend the use of mitigating measures or monitoring programmes that can be incorporated into the development design to make the proposals acceptable. This will enable the Council, consultees and the general public to reach an informed opinion as to the likely environmental effects of the proposals, should the development be permitted.

3.6. Under the Section 15 of the 2017 Regulations, an applicant may ask the Planning Authority to state in writing their opinion as to the scope and level of detail of information to be contained in an Environmental Assessment. This is called a Scoping Opinion, although its requirement is not mandatory. If a scoping opinion is sought, Regulation 18(4) of the regulations requires the Environmental Statement to be based on this scoping opinion. In this case, the Applicant has chosen not to scope this proposal, but instead did seek pre-application advice from the Council, and the advice received has been taken into account in designing the development and in undertaking the necessary assessments. The experienced EIA project team have individually addressed the likely issues arising from the development, in consultation with the relevant consultees where necessary, so that mitigation measures can be identified and built into the proposals where necessary.

3.7. An assessment of the main environmental effects of the proposed development and their likely significance is discussed in detail in this Volume and its supporting technical appendices. The planning statement (Volume 1) provides a summary of those effects in concluding whether or not the proposed development accords with policy.

3.8. In this case, the scope of the assessment has taken into account the impact of the proposal on the following matters:

- The impact on the surrounding landscape, taking into account landscape character and the effects on visual amenity of surrounding land users, during the operational stages and following restoration.

- The impact on archaeology and the historic environment, taking into account the potential for below ground remains and the impact on nearby designated and undesignated heritage assets, including the nearby Conservation Areas and listed buildings

- The impact on ecology, including habitats and protected species, both during operational and restoration phases; including the gain and loss of different habitat types as a result of the proposal and impact on overall biodiversity

- The impact on surrounding sites with ecological designations

- The impact on the water environment, which has included an assessment of the impact on groundwater and flood risk, including nearby designated sites

- The impact on highways, taking into account the proposed new access, proposed movements arising from the development and impact on current traffic flows and highway safety

- The impact on air quality, particularly upon the Air Quality Management Area, the nearest residential properties and ecological designations

- The impact of noise arising from the operations, taking into account the noise arising from normal operations and from temporary operations such as bund formation, particularly on the nearest residential properties

- The impact of the proposal on climate change

- Cumulative impacts of the proposal

# 4. METHODOLOGY

## Objectives

4.1. The objectives of the Environmental Impact Assessment process for the proposed extraction of sand and gravel at Hamble Airfield, have been to:

- Provide a framework for the assessment of environmental impacts that could potentially arise from the proposed development
- Set out the geographical, technical and temporal scope of each assessment and explanations for excluded elements
- Set out the methods and criteria used for baseline assessments for each separate discipline
- Determine the environmental baseline conditions for each separate discipline assessed
- Assess the impact of the development on the baseline conditions for each discipline
- Assess the cumulative impacts of the development and any other relevant developments on the identified baseline conditions
- Set out recommendations to mitigate against any significant impacts
- Detail the residual impacts after mitigation is implemented as recommended
- Conclude the impacts for each discipline, cumulative impacts and the Environmental Impact Assessment as a whole
- Set out requirements for further studies and assessments where required

**Methodology**

4.2. The assessments presented within this ES have considered the potential for significant environmental impacts affecting the baseline conditions as a direct or indirect result of the proposed development. The baseline conditions are the existing state of the environment and how it may develop in the future, in the absence of the proposed development.

4.3. Future impacts are based on predictions, and in order to ensure the accuracy of these, assessments have been undertaken in accordance with the best practice guidelines published by the relevant professional bodies. Each chapter of this ES has detailed the methodology used within the chapter, and the following general methodology has been applied where there is no other methodology that is well-established or recommended by a professional institution.

**Receptor Sensitivity**

4.4. The sensitivity of a receptor refers to its importance in environmental and amenity terms. This could be influenced by, for example, a site's level of statutory designation, or the use of a nearby building. The terminology defining sensitivity can vary according to discipline, however within this ES the sensitivity is generally defined as follows:

- Very High
- High
- Medium
- Low

### Impact Magnitude

4.5. Impact magnitude is determined by predicting the scale of the likely impact upon the baseline conditions. Where possible, the magnitude has been quantified, and the assessment of magnitude is carried out considering any mitigation that is primary or embedded into the proposed development, such as design features. The magnitude is then quantified after secondary/additional mitigation is taken into account.

4.6. Impact magnitude in this ES is generally defined in the following way, in the absence of any other specific methodology:

- **Substantial** – Impact resulting in a considerable change in the baseline condition of a specific receptor/attribute with severe undesirable/desirable consequences
- **Moderate** – Impact resulting in a discernable change in baseline condition of a specific receptor/attribute with undesirable/desirable consequences, or with the potential to cause statutory objectives to be exceeded
- **Slight** – Impact resulting in a discernable change in the baseline condition of a specific receptor/attribute with undesirable/desirable conditions that can be tolerated.
- **Negligible** – No discernable change in baseline conditions.

4.7. Where a different methodology has been used, this has been described in the individual chapter.

### Significance of Effect

4.8. The interaction of receptor sensitivity and impact magnitude is used to determine the significance of an environmental effect. The following table is generally used (unless otherwise set out in the chapter) to determine the significance of the effect, with the shaded effects described as “significant”:

| | | Magnitude of Impact | | | |
|---|---|---|---|---|---|
| | | Substantial | Moderate | Slight | Negligible |
| Sensitivity | Very High | Major | Major | Major/Moderate | Neutral |
| | High | Major | Major/Moderate | Moderate/Minor | Neutral |
| | Medium | Major/Moderate | Moderate | Minor | Neutral |
| | Low | Moderate/Minor | Minor | Minor/Neutral | Neutral |

4.9. Significant impacts may be the following:

- Beneficial or adverse
- Direct or indirect
- Short, medium or long term
- Temporary or permanent
- Reversible or irreversible
- Cumulative

**Level of Confidence**

4.10. The predictions within the ES can only be as accurate as the data upon which they are based. As such, it is important to state the level of confidence in an assessment of significance. Confidence can be stated as high or low as follows:

- High – The significance of an environmental effect is an informed estimate likely to be based on reliable data or subjective judgement with reference to similar schemes. Further information would not result in any change in assessment results.

- Low – The significance of an environmental effect is a best estimate likely to be based on subjective judgement without reference to similar schemes. Further information would be needed to ensure that confidence in the assessment result was high.

### Mitigation measures

4.11. Mitigation measures are identified where necessary to reduce the magnitude of the impact and therefore the significance of the environmental effect. The following terminology has generally been used when determining mitigation measures for this ES:

- **Prevent** – To avoid adverse effects as far as possible by designing out potential problems or using preventative measures
- **Reduce** – To minimise adverse effects as far as possible
- **Offset** – To compensate for adverse effects where it is not possible to avoid them or where the effect has been minimised as far as possible
- **Enhance** – To identify opportunities where enhancement can be incorporated into the scheme where effects have been neutralised.

4.12. Mitigation measures generally fall into two types as follows:

- **Embedded/design mitigation** – Where the design of the proposal has been altered to avoid impacts on a particular feature or taken into account a particular issue. Where this has been included, it may form part of the project description, or the boundary of the site may have changed in order to avoid a certain area for example.
- **Additional mitigation** – Other mitigation that has been identified as necessary as a result of the impact assessment that has been undertaken

4.13. Details of embedded or additional mitigation has been set out in the chapters, where applicable. An assessment of the residual magnitude of the impact has been conducted, following the determination of additional mitigation measures. The residual environmental effects are the final outcome of the EIA process.

### Limitations

4.14. Where there are limitations in the technical assessments, these have been described within the chapters.

### Cumulative impacts

4.15. All chapters within this document have addressed any potential cumulative impacts arising from the proposal in combination with other nearby developments. In looking for other potential sites that may result in cumulative impacts, a search of other mineral sites within close proximity has been carried out, as well as a search of major planning applications and development projects which could potentially be undergoing construction within close proximity to the site whilst the site is operational.

### Chapter Structure

4.16. Each chapter from Chapter 7-14 inclusive is generally set out in the following way, although some chapters have slightly different headings:

1. Introduction
2. Study Area
3. Assessment Methodology
4. Baseline Environment
5. Embedded Mitigation
6. Likely Significant Environmental Effects
7. Additional Mitigation Measures
8. Assessment Summary and Residual Effects
9. Cumulative Impacts
10. Climate change
11. Summary and Conclusions

# 5. THE ASSESSMENT TEAM

5.1. Regulation 18(5) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 requires that to ensure the completeness and quality of the environmental statement, the developer must ensure that the environmental statement is prepared by competent experts; and the environmental statement must be accompanied by a statement from the developer outlining the relevant expertise and qualifications of such experts.

5.2. Chapters 1-6 and 14-18 of this Environmental Statement have been written by Emma Pearman, Principal Development Planner at CEMEX, who has also managed and co-ordinated the EIA project and planning submission overall. Emma is a Chartered Town Planner with over 15 years' experience in planning and holds a BA (Hons) Human Geography and MSc Spatial Planning and Emma is a Chartered Member of the Royal Town Planning Institute. Emma was previously a Senior Planning Officer at both county and district councils, determining applications for minerals and waste projects and other major planning applications including EIA development, before joining CEMEX. Emma also has considerable experience of preparing Environmental Impact Assessments in relation to quarry development.

5.3. Chapter 7 – Noise and the associated appendices at Appendix 1, have been written by Dr Robert Storey of Walker Beak Mason. Robert Storey BEng PhD MIOA is a Senior Consultant at WBM. He obtained his degree in Mining Engineering from the University of Leeds in 1993 before going on to complete a PhD in *"The Acoustic Response of Structures to Blast Induced Ground Vibration"* in 1998. He joined WBM in 2007 after working in acoustic consultancy and environmental health since 1999 and has over 20 years' experience working in the subject area of noise. He specialises in environmental noise, working mainly on mineral extraction, waste and industrial projects.

5.4. Chapter 8 – Water Environment and Flood Risk and associated appendices at Appendix 2 have been written by staff at Stantec Ltd, primarily Henry Kelly and Robert Sears. Henry Kelly is a senior hydrologist at Stantec, with 10 years' post graduate experience and is a chartered member of CIWEM (MCIWEM C.WEM). He received a Batchelors of Science (First Class Honours) degree from Portsmouth University and a Master of Science (Merit) degree from Imperial College London in Hydrology and Water Resources Management. Henry specialises in the fields of flood risk and mitigation, drainage design, impact assessment and numerical modelling and has drafted numerous FRAs and drainage strategies for mineral extraction sites across England and Wales.

5.5. Robert Sears is a Principal Hydrogeologist and Project Manager at Stantec and holds a BSc in Geology from the University of Edinburgh, and an MSc in Hydrogeology from the University of Birmingham. Robert is also a Chartered Geologist and Fellow of the Geological Society. Robert is a hydrogeologist with a background in all aspects of hydrogeological assessment, including contaminated land, landfill and water resources. He has comprehensive experience of all aspects of hydrogeological investigation including site investigation and data collation, conceptual model development, modelling, risk assessment and reporting. Robert has project managed and had technical input to many Environmental Impact Assessment projects. Robert has specialised in quarry planning applications and associated environmental permit applications for restoration with imported materials.

5.6. Chapter 9 – Landscape and Visual Impacts and the associated appendices at Appendix 3, have been written by Alison Wise, who is a Principal Landscape Architect at CEMEX. Alison has been a Chartered Member of the Landscape Institute since 1997, and holds a Postgraduate Diploma in Landscape Architecture (Sheffield 1992) and a 2:1 BSc Honours in Landscape Design and Plant Science (Sheffield 1990). Alison has been responsible for designing restoration sites for RMC and subsequently CEMEX nationally since 1992.

5.7. Chapter 10 – Ecology and most of the associated appendices at Appendix 4, have been prepared by Andrew Heideman, Senior Ecologist at LC Ecological Services. Andrew holds a BSc (Hons) Environmental Science and is an Associate Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Andrew has considerable experience in ecological work for a wide range of development projects, including quarries, large scale residential developments and rail and highway works. Andrew holds licences for surveying various species and specialises in detailed botanical work.

5.8. Chapter 11 – Archaeology and the associated appendices at Appendix 5, have been prepared by Andy Richmond of Phoenix Archaeology. Andy Richmond (BA PhD MCIfA FSA), is a founder director of Phoenix Consulting Archaeology Ltd, established in 1997. He holds a BA degree in archaeology from the University of Wales and a Doctorate from Reading University. He is a Member of the Chartered Institute for Archaeologists and an elected Fellow of the Society of Antiquaries of London. Andy regularly undertakes archaeological and heritage assessments for potential minerals allocations, large-scale housing sites and town centre redevelopment opportunities. From an academic perspective, he has published archaeological works in National Journals over the past 20 years.

5.9. Chapter 12 – Air Quality, and Appendix 6, have been written by Bob Thomas BSc (Hons) PgDip MSc MIEnvSc MIAQM CSci. Bob Thomas is a Director at AQA, with over fourteen years' experience in the field of air quality management and assessment. He has carried out air quality and odour assessments for a wide range of developments, including residential, commercial, industrial, minerals and waste developments. He has been responsible for air quality projects that include ambient air quality monitoring of nitrogen dioxide, dust and $PM_{10}$, the assessment of nuisance odours and dust, and the preparation of Review and Assessment reports for local authorities. He has extensive dispersion modelling experience for road traffic, energy centre and industrial (including odour) sources, and has completed many stand-alone reports and chapters for inclusion within an Environmental Statement. He is a Chartered Scientist, a Member of the Institute of Air Quality Management and a Member of the Institution of Environmental Sciences.

5.10. Chapter 13 – Transport and the associated appendices at Appendix 7, have been prepared by Imogen Nicholson and Ben Howard of i-Transport. i-Transport is one of the largest independent transport planning practices in the UK, with over 15 years' experience in the preparation of Transport Chapters for Environmental Impact Assessments (EIA) for a wide range of developments, including mineral extraction. The Transport Chapter has been produced using the professional judgement and competence of personnel from the Practice. The primary authors are Ben Howard (MSc, BA (Hons), MCIHT) who is an Associate Partner and who has over 12 years of transport planning experience and Imogen Nicholson (MEnvSci (Hons), MCIHT, MTPS) who is a Principal Consultant at i-Transport and has 7 years' experience in transport planning.

# 6. CONSIDERATION OF ALTERNATIVES

6.1. Regulation 18 (3) (d) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 requires the ES to include a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.

6.2. There is no definition of what the alternatives should include, however in this case it is considered that alternatives open to consideration could include the following:

- Demand alternatives
- Location alternatives
- Process alternatives
- Scheduling alternatives
- “Do nothing” scenario

**Demand alternatives**

6.3. The need for aggregate is considered fully in Section 10 of the Planning Statement at Volume 1. Government Guidance in the form of the National Planning Policy Framework states that it is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs, and this need for such mineral is similarly reflected in the local development plans for this area.

6.4. The future demand for mineral in Hampshire is set out in the Local Plan, which requires that Hampshire needs to provide for a steady supply of aggregates, maintaining landbanks for at least seven years for sand and gravel. The latest Local Aggregate Assessment (LAA) for Hampshire states that to meet future demand for aggregate, Hampshire will greatly need to increase its land-won aggregate bank. The LAA notes that the minimum 7-year landbank is not currently being met, and even if permission is granted for applications for additional sand and gravel which are undetermined at the time of writing, the landbank is not likely to increase much beyond 7 years and will quickly deplete again.

6.5. There are almost no reasonable alternatives to sand and gravel for construction materials. Recycled aggregates can make a contribution for certain applications of aggregate, and the LAA shows that there are 31 sites for recycled and secondary aggregates in Hampshire, although sales have been falling year on year in Hampshire, since a peak in 2014. The capacity for recycled and secondary aggregates is estimated in Hampshire's LAA to be around 2.38mt per annum, however sales in 2018 were 0.72mt.

6.6. Recycled aggregate tends to account for around 25% of the supply of aggregate only, as it is limited by the supply of construction, demolition and excavation (CDE) waste, constraints in site locations given the processes required to produce recycled aggregate which can be detrimental to amenity, availability of appropriate sites and the amount of investment needed to convert CDE waste into a high-quality aggregate.

6.7. Recycled aggregates tend to have a relative density lower than that of primary aggregates, and absorb more water. Concrete from recycled aggregate often has higher drying shrinkage and creep as well as being less durable. As such primary aggregates are more consistent in performance and strength, and tend to be used for concrete production over recycled aggregates that tend to be used more for fill and capping. Recycled aggregates tend to be available in smaller quantities as well as it relies on waste being produced from the construction industry, so it can be less useful for larger projects where consistency of composition, strength and quantity is key. Therefore, materials of different physical properties and qualities are often needed to meet different end uses, and the scope to substitute one aggregate material for another can be limited.

6.8. Marine aggregates are another source of supply in Hampshire, and account for the majority of the supply, with the Policy 17 of the Hampshire Minerals and Waste Plan 2013 (HMWP) identifying that they could supply around 2 million tonnes per annum (mtpa) of aggregate. The latest LAA shows however that actual supply has been lower at just over 1.5mpta at its peak. There are six wharves in Hampshire, with two in Southampton, Marchwood on the opposite side of Southampton Water, and the remaining three in Fareham, Portsmouth and Havant areas. However, supply from wharves is limited by lack of capacity, and some wharves have closed in the last few years. Marine aggregates also have a finite supply, and there can be pressure on wharves for redevelopment given their locations, with some constrained by incompatible surrounding land uses.

6.9. Whilst marine aggregates are the largest source of supply in Hampshire, Policy 17 of the HMWP sets out that an adequate and steady supply of aggregates until 2030 will be provided for from local sand and gravel sites, at a rate of 1.56mtpa. The supply will be augmented by safeguarding infrastructure capacity so that around 1mpta of recycled and secondary aggregates, 2mtpa of marine aggregate and 1tmpa of limestone delivered by rail can also be supplied. This is considered to reflect the market and environmental conditions in Hampshire, without prejudicing the supply of aggregates to the wider region. It is therefore clear that all of these sources are required to provide a sufficient long-term supply in Hampshire.

**Location alternatives**

6.10. Unlike other types of development, minerals can only be worked where they are found. This site is an allocated site in the Hampshire Minerals and Waste Plan 2013, and as such, the Mineral Planning Authority have already been through a process when deciding on the sites to allocate, which looked at the most suitable sites for mineral excavation, and found that this site was the most suitable location in south Hampshire. This process would have looked at a range of factors including likely effects on the landscape, ecology, residential amenity, archaeology and heritage; as well as the site's location in terms of access to major roads.

6.11. Hampshire is constrained by large parts of the county being within National Parks and Area of Outstanding Natural Beauty designations, which makes it more difficult to extract minerals in these areas because of the effects on the protected landscape. Potential mineral sites are also often constrained by insufficient access to roads suitable for HGV traffic, ecological designations, and a wide range of other factors.

6.12. This site is not close to any other quarries, which are largely clustered around the south-west of Hampshire and provide mineral to the urban areas around Poole and Bournemouth. This site would be able to provide mineral to the geographical areas around the eastern side of Southampton, and the western side of Fareham and Portsmouth, by using its good road connections to the M27, noting that Junction 8 of the M27 is due to be improved by Highways England. Therefore, having a site located here shortens the journeys of HGVs which would otherwise travel to this area, making it a more sustainable way of supplying the south Hampshire areas.

**Process alternatives**

6.13. The proposal has been through design alterations and the development proposed is considered to result in the least impact on the environment and amenity. The location of the access has been determined following detailed discussions with the County Highway Authority over a number of years, and the provision of a road safety audit, in order to find the safest point of access and in a location that minimises the impact on trees.

6.14. The stand-offs from the boundary and height of the bunds have been determined in consultation with a noise consultant to ensure that no significant impacts on surrounding noise sensitive receptors. The proposed plant site location has also been chosen in order to be close to the access and to be away from most residential properties. As such, the proposal has been shaped by the various assessments carried out as part of the EIA process.

6.15. Conveyors will be used to transport the material from the excavation areas to the processing area and this will have less environmental impacts than movements of dumper trucks between these two areas.

6.16. In terms of access to the site, there is no suitable alternative than using the road. The site is adjacent to the railway line at the north of the site, however there are a large number of factors restricting the use of the railway to transport mineral from this site.

6.17. There is currently no rail siding, so this would have to be built into the site to take mineral by rail, as well as the associated infrastructure. This in itself would cause significant disruption to surrounding neighbours, with the construction vehicles having to come by road, and the associated ongoing noise and amenity impacts for constructing this, without any location for mitigation such as bunds so close to Hamble School.

6.18. There would have to be a suitable window for using the siding provided by Network Rail, and often it is not within daytime hours that these windows are available, and night time loading is not likely to be possible, given the proximity of properties to the north of the railway along Hamble Lane, as well as those in Satchell Lane towards the north of the site. The noise of loading and unloading railway trucks can cause significant disturbance even in the daytime, and given the very close proximity of residential properties along Hamble Lane, with very limited space for noise mitigation, it is likely that the noise from this would not meet the required criteria to result in a good standard of amenity for these properties and the school.

6.19. In order to transport mineral by rail, there also has to be suitable facilities at the other end for it to go to and CEMEX are not aware of any suitable locations for it to be unloaded at nearby stations. The mineral is required in this part of south Hampshire and as such it would not be sent further afield. At the other end it would also have to be transported by road, so the vehicle numbers overall would not be reduced, but moved to another local area nearby.

6.20. Given these constraints, CEMEX only transport mineral by rail from one quarry in the UK, which has around 100 million tonnes of aggregate reserves. The cost of setting up a railway siding is significant and for the small amount of material to be extracted at Hamble, in the region of 1.7 million tonnes by comparison, would not make the project financially viable.

6.21. Using barges to transport the mineral would also not be possible, given that the site is not adjacent to any river, and as such the same number of HGVs would have to leave the site to transport the mineral to the nearest barge facilities, which would be likely to involve using Satchell Lane and other small roads to reach the water. As such it would not result in any benefits in terms of reduced congestion to local roads and would result in less suitable roads having to be used.

**Scheduling alternatives**

6.22. The site is allocated in the HMWP which plans for the supply of mineral in the county until 2030. The site was expected to come forward any time from 2016 as stated in paragraph 6.77 of the HMWP so it is not premature in that regard. At the moment, as set out in Section 10 of the accompanying planning statement, Hampshire are struggling to meet and maintain a landbank for sand and gravel of the minimum 7 years and as such the LAA states that to meet future demand for aggregate, Hampshire will greatly need to increase its land-won aggregate bank. It is likely to take up to 2 years before the site is up and running, including the time taken to obtain planning permission, and as such it is not likely to be operating until at least 2023, and by 2025 other sites in Hampshire will be running out, as explained in Section 10 of the planning statement. It is therefore clear that the site is needed at the present time to maintain the consistent supply of sand and gravel in the County.

**Do nothing scenario**

6.23. Another alternative to the demand is the "do nothing" scenario, which means considering the impact if this proposal was not to go ahead. If this site was not available it will result in aggregate coming to this area from further afield, which is less sustainable in terms of vehicle movements than providing a local supply. If Hampshire does not supply sufficient land-won sand and gravel for its own needs, it may result in sand and gravel being imported from other counties and as well as being less sustainable environmentally, this merely passes any impacts of mineral development onto other communities. It is also likely to result in construction projects, including house building and extensions, taking longer to complete, with the associated adverse impacts to surrounding neighbours for a longer period, and prices significantly increasing with the short supply.