

14. IMPLICATIONS OF ‘NO DEVELOPMENT’ SCENARIO

14.1 Introduction

14.1.1 Schedule 4 (5) of the 2017 Regulations states that an Environmental Statement must contain “an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.”

14.2 Current Environmental Baseline at Hamble Airfield

14.2.1 The ecological baseline has been described in Section 10.4 of Chapter 10. It states that the site is an expanse of regenerated grassland and scrub, together with remnant boundary hedgerows and minor stands of regenerating broadleaved woodland. Grazing by deer and rabbits maintain some of the vegetation present, along with periodic management by landowners.

14.2.2 The habitats on-site include semi-improved grassland which largely comprise rank and overgrown swards and coarse grasses, as well as some acid grassland. There is also a large amount of scrub on site, along with native hedgerows which have a number of gaps.

14.2.3 The site also contains broadleaved woodland, generally at a young stage of growth with semi-mature oak and silver birch, with some sycamore, ash and goat willow. The understorey consists of field maple, hazel, hawthorn, blackthorn, with saplings of oak, sycamore and silver birch. The field layers were species poor and dominated by ivy, bramble and bracken. There are also scattered trees again comprising the above species as well as elm, cherry, bird cherry, whitebeam and rowan.

14.3 Evolution of site through natural changes

14.3.1 If the site was not worked, it is likely that the environmental baseline would not significantly change, even in the long term. The existing habitats would continue to develop, and the site would largely contain grassland and scrub as existing. Occasionally, species other than those listed above may start to grow on the site if they have arrived by foot, by animal or bird, or by wind. The vegetation would be kept in check by wild grazing from deer and rabbits and would still be managed by the site owners. If the site was completely unmanaged, eventually grassland may give way to pioneer tree species and eventually, over a very long period of time the site may contain largely woodland.

14.3.2 The scheme proposes planting of new species rich native hedgerow, enhancement of existing stands of woodland, and enhancement of the site for reptiles in terms of species and hibernacula. The restoration scheme proposes a significant gain in native hedgerow of over 1km, with the existing gaps filled; as well as enhancement of the woodland and semi-improved grassland; and creation of around 46 ha of acid grassland, 3.4ha of native scrub, 2.8 ha of woodland, scattered trees and wetland habitat. This will result in a biodiversity net gain overall of over 10% and a hedgerow gain of around 130%. As such, without implementation of the development and ongoing site management, the biodiversity value of the site would likely end up as significantly less than proposed.

14.4 Other consequences of no development

14.4.1 If the site was not worked for minerals, it could lead to other built development being built on the site (although it is currently safeguarded through planning policies for prior mineral development). If this were the case it would sterilise the minerals and it would be unlikely that they could ever be recovered. This would put pressure on other areas and other sites to fulfil the current need for minerals in Hampshire and would be likely to lead to importation via HGV from further afield, which is less sustainable overall.

14.5 Conclusion

14.5.1 It is concluded therefore that should the development not go ahead, the natural baseline of the site would continue to evolve with similar species as are currently there. The vegetation would likely be kept in check by some animal grazing and site management. Over time, if the site was completely unmanaged, eventually grassland may give way to pioneer tree species and eventually, over a very long period of time the site may contain largely woodland. If the site was not worked, it is likely that the biodiversity value of the site would be less than is proposed through the restoration of the site. If mineral extraction did not go ahead it is also possible that other development eventually would, and this would sterilise the mineral resulting in it having to be imported from further afield.

15. HUMAN HEALTH

15.1 Introduction

15.1.1 Paragraph 4 (2) of the 2017 Regulations states that an Environmental Statement must “identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on factors including population and human health.”

15.1.2 Schedule 4 of the 2017 Regulations goes on to set out the information for inclusion in Environmental Statements. Paragraph 5 requires:

“A description of the likely significant effects of the development on the environment resulting from, inter alia:

(d) the risks to human health, cultural heritage or the environment (for example due to accidents and disasters)

15.2 Scope of Assessment

15.2.1 EIA must be accessible, proportional and robust. This assessment considers the reasonably foreseeable potential impacts of the proposal on human health. Effects on human health can be caused by a number of ‘pathways’ such as water contamination, dust, noise etc. This assessment therefore draws on the conclusions contained within the following assessments:

- Hydrology and Flood Risk (Chapter 8)
- Noise (Chapter 7)
- Dust & Air Quality (Chapter 12)
- Transport (Chapter 13)
- Landscape and Visual Impacts (Chapter 9)

15.2.2 The impact of the proposal in terms of potential accidents is considered in Chapter 16 below.

15.3 Description of Proposal

15.3.1 The Proposal involves the use of established technologies and techniques with regards to materials handling, extraction, processing, stockpiling, tipping and transportation. Full details of the Proposal are set out in Chapter 2 of this ES and as such there is no requirement to expand on these for the purposes of this study.

15.4 Methodology

15.4.1 This assessment draws on the findings and conclusions of Chapters 6, 7, 8, 12 & 13 of this ES, in order to identify any potentially significant effects of the proposal on human health.

15.5 Mitigation Measures

15.5.1 Mitigation measures relating to those factors under which human health effects might occur have been addressed within the chapters as set out above. These include:

- Bunds around the outside of the quarry for noise, visual and air quality mitigation, which will be seeded upon completion
- Limiting of infilling movements until extraction is complete
- Post-restoration surface water drainage strategy
- Recycling of water on site resulting in a reduction of groundwater discharge from the site
- Groundwater level and quality monitoring during operational, restoration and aftercare periods
- Good site management practices including no fuelling at the excavation face and keeping fuels in bunded tanks with spill kits on site
- Infilling with imported restoration materials to be carried out under strict controls with regards to types of materials and may require a clay

geological barrier. Infilling to be undertaken in line with the Environmental Permit.

- A Dust Management Plan (DMP) will be prepared and agreed with the local planning authority for implementation at the proposed development;
- Won minerals will be transported to the processing area using a field conveyor;
- The processing area and stockpiles will be located more than 100m from any dust sensitive receptors;
- The screening and washing of minerals being a wet process, that would minimise dust emissions;
- Drop heights will be minimised;
- Water suppression will be used as necessary for dust suppression;
- Duration and timing of dust generating activities will be restricted when undertaken within 100m of dust sensitive receptors during dry/windy conditions, when operationally possible;
- On-site vehicle speeds will be kept below 10mph; and
- All HGVs would be covered prior to leaving the site and would use a wheelwash and travel over more than 50m of clean, hard surface before joining the public highway.
- Further boundary advance hedgerow and tree planting.
- Retention, management, and supplementation of boundary vegetation.
- The design of the processing plant, minimising its height.
- A phased scheme of working and restoration to reduce areas open at any one time.
- The design of the final restoration scheme to reinstate pastoral agriculture, and create new woodland, landscape, and conservation

features in accordance with the principles set out in the Minerals Local Plan, and the Landscape Character Guidelines.

- Improvements to the condition of the existing Public Rights of Way Network.
- Provision of an additional length of permissive footpath as a safer alternative route to pedestrian use of part of the Satchell Lane public highway

15.6 Assessment of Potential Effects

Hydrology and Flood Risk (Chapter 8)

- 15.6.1 The site area extends to around 60ha and it is located on an elevated area of land between Southampton Water and the River Hamble. Ground elevations at the site range from 23.9mAOD to 13.3mAOD, with a topographical divide running approximately north-south through the centre. Surface water run-off from the site flows down topographical gradients to the eastern, western and southern margins of the site, towards the River Hamble, Southampton Water and other minor surface water courses.
- 15.6.2 The geology at the site comprises the Selsey Sand Formation (SSF), Marsh Farm Formation (MFF) and Earnley Sand Formation (ESF), These are underlain by clays from the Wittering Formation, and all the formations are within the Bracklesham Group.
- 15.6.3 The superficial sand and gravel deposits comprise the River Terrace Deposits (3rd Terrace), which consists of brown, sandy gravel with clay lenses and localised areas where clay dominates. Groundwater is around 3-5m below the surface across most of the site.
- 15.6.4 The standard average annual rainfall at the site is 767mm. Both Southampton Water and the River Hamble are tidal watercourses, with a tidal range of 2.5mAOD - -2mAOD. The highest level on record is 2.8mAOD which is

significantly below the ground level of the site as set out in 15.5.1 above. The site is located in Flood Zone 1, which has the lowest risk of flooding from rivers or the sea.

- 15.6.5 Surface water flooding is usually associated with intense rainfall events, but may also occur when rain falls on land that is already saturated or has a low permeability. Rainfall that is unable to infiltrate into the ground generates overland flow which can lead to flooding or ponding in localised topographic depressions, before the run-off is able to enter the drainage system or watercourse. The risk of surface water flooding for this site is demonstrated to be low.
- 15.6.6 Groundwater flooding occurs when the water table rises above the ground surface or into man-made ground. Groundwater flood risk at the site is also considered to be low, given the depth of the groundwater below the surface. Operations at the site may be undertaken partly below the water table, however water will be removed at the face and retained within the site, with no pumping of water off-site. Health and safety measures will be designed for the operational site, for working below the water table and working near water (such as barriers, signage and site induction material) to mitigate the risk posted by open water bodies or from flooding by returning groundwater.
- 15.6.7 The site is not at risk of flooding as a result of reservoir failure and there is no known history of flooding at the site.
- 15.6.8 Once the site is operational, run-off will be directed to new lagoons in the northern part of the site (Phase 1), and as extraction occurs around the site in phases, then the run-off will be directed to the active quarry void. Once run-off enters the void or lagoon, it will infiltrate to the sand and gravel aquifer below the Site. Surface water running off-site is expected to decrease during the operational period of the site, given the large quarry voids and lagoons which will collect the water on the site instead. Upon site restoration, drainage features have been created in the naturally lower areas of the site where surface water

can drain to, and infiltration trenches will be installed around the periphery of the site to intercept and infiltrate run-off from the remaining catchment areas to prevent any increase in off-site run-off that could arise from using less permeable fill material.

- 15.6.9 In terms of flooding therefore, there will be a decreased likelihood of surface water flooding during the operational phase, due to the large voids created within the site, and upon restoration, drainage features will be created within and on the periphery of the site to manage surface water. There will be no risk to human health therefore from flooding.
- 15.6.10 In terms of potential impacts from spills on site, which could get into groundwater, there is relatively little groundwater and as such any fuel or oil leaks from machinery operating at the excavation face can be easily observed and cleaned up. No fuel will be stored in the excavation area and no fuelling activities carried out in this area. The site drainage system will be inspected on a regular basis to ensure that there is no visible oil present and no reported incidents of spills. Fuel storage tanks in the plant site will be bunded in line with good management practice and spill kits will be kept on site to quickly clear up any spillages.
- 15.6.11 There is the potential for contaminants present in the restoration materials to leach into groundwater. However, only inert restoration materials will be accepted to the Site and the Applicant will apply strict acceptance procedures to ensure that contaminated material is not accepted. There would be a suitably qualified person onsite to deal with the imported materials and information on the source of the material would be collected prior to it arriving within the site. Loads would be visually checked upon arrival and a quarantine area within the plant site for any further checking to be carried out. Restoration materials not suitable for the site would be taken off-site by the importer. Restoration via imported materials would be undertaken via an Environmental Permit and additional controls such as a geological barrier / attenuation layer may be required to further protect groundwater.

15.6.12 Groundwater level and quality at the site will be monitored at the site perimeter wells throughout the operational lifetime of the quarry and for at least five years afterwards.

15.6.13 Given the above conclusions, subject to the implementation of the mitigation measures proposed, the proposal is not likely to have any significant adverse effects on ground or surface water, and would not lead to an increase in flood risk. Therefore no adverse effects on human health are considered likely through this pathway.

Noise (Chapter 7)

15.6.14 Mineral extraction and infilling has the potential to generate noise levels which could adversely affect the amenity of nearby residential properties and other noise sensitive locations. As a result, a Noise Assessment has been undertaken and the impact of the proposals on the noise climate is set out within Chapter 7 of this ES.

15.6.15 The Noise Assessment selected six locations very close to the site to carry out noise monitoring, which are as follows:

- Astral Gardens/Tutor Close
- The Close, Satchell Lane
- Properties on Satchell Lane
- Wessex Manor
- Hamble School
- Properties on Hamble Lane

15.6.16 The noise assessment measured background noise levels at these properties on three separate dates and times with four measurements taken at each location. These were taken at times when background traffic levels were likely to be at their lowest.

- 15.6.17 The Planning Practice Guidance for Minerals sets out the appropriate noise levels for residential properties during mineral working, which can be no more than 10dB(A) above the baseline level for routine operations. There is a higher noise limit for temporary operations (such as bund creation) which can only happen for a certain number of weeks each year. Once the bunds are in place, these will help in mitigating the noise from the site. The bunds will be put in place prior to the start of mineral extraction.
- 15.6.18 The noise assessment uses a reasonable worst-case scenario for its calculations, which is the items of plant being assumed to operate and the closest practical position of the proposed simultaneous extraction/infilling areas to each dwelling. It has also been assumed that the plant items work 100% of each hour and the tipping 20% of each hour. Sound power levels for each item have been used based on manufacturer's data, and the contribution from each specific noise source evaluated separately then combined together to give the overall noise level. Soil and overburden stripping, site maintenance, road construction and bund formation and removal are considered as temporary operations.
- 15.6.19 The Noise Assessment shows that for all of the six noise locations set out above, the noise level would be lower than the appropriate limit for routine operations (background plus 10dB(A)), and as such it would result in a good standard of amenity for the occupiers of residential properties and the school. It also shows that the calculated noise level for the temporary operations would also be well within the higher allowed noise limit for temporary operations.
- 15.6.20 The proposed mitigation measures in the form of bunds will be maintained for the duration of the quarry working and infilling. It is likely that planning conditions, should permission be granted, would also control the noise environment and these could include setting the maximum noise limits at surrounding sensitive receptors, a noise monitoring scheme, the use of silencers and white noise reversing alarms, and maintenance of plant in accordance with the manufacturer's specification.

15.6.21 The noise limits are therefore well within the recommended national guidelines for these types of operations, and the mitigation proposed will control the noise environment to protect local amenity. It is therefore concluded that noise levels attributable to the proposal would not lead to an adverse impacts on local amenity and therefore would not lead to any adverse health impacts.

Dust & Air Quality (Chapter 12)

15.6.22 Air pollutants at high concentrations can give rise to adverse impacts to the health of humans and ecosystems. Mineral sites can potentially give rise to dust and air quality impacts arising from dust generating activities on site (e.g. sand and gravel extraction, stockpiling of sand and gravel, creation of bunds with soil) and from additional HGV and other vehicle movements.

15.6.23 Medical studies have consistently failed to find any link between dust arising from mineral working and public health. Studies undertaken at mineral extraction sites indicate that particles with a mean hydraulic diameter greater than 30µm will usually be deposited within 100m of its source. Moderate sized particles within the range of 10µm to 30µm may travel 250m to 500m from their source, whilst smaller sized particles that are less than 10µm may be carried up to 1km from source.

15.6.24 The European Union's Directive on ambient air quality and cleaner air for Europe (European Parliament, Council of the European Union, 2008) set legally binding limit values for NO₂, PM₁₀ and PM_{2.5}. The Air Quality Standards Regulations 2010 (The Stationary Office, 2010) implement the EU Directive limit values in English legislation. Achievement of the limit values is a national obligation rather than a local one.

15.6.25 The objectives for NO₂ and PM₁₀, as prescribed by the Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002 (The Stationary Office, 2000; The Stationary Office, 2002), are shown in the table below:

Pollutant	Concentration Measured As	Objective
NO ₂	1-hour Mean	200 µg/m ³ not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m ³
PM ₁₀	24-hour Mean	50 µg/m ³ not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m ³
PM _{2.5}	Annual Mean	25 µg/m ³

15.6.26 The PM_{2.5} objective is shown above, however, although local authorities are expected to work towards reducing PM_{2.5} concentrations, there is no obligation for local authorities to try to meet the PM_{2.5} objective, and it is not included in the Regulations. The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective.

15.6.27 Eastleigh Borough Council has declared four Air Quality Management Areas (AQMAs) in the borough for exceedances of the annual mean NO₂ objective, and part of Hamble Lane, close to the Windhover Roundabout, has been designated for this reason. No AQMAs have been designated for PM₁₀ and as such it is unlikely there are any exceedances of PM₁₀ in the borough.

15.6.28 Chapter 12 of the ES sets out the embedded mitigation measures which will be used on site. These include screening by bunding and vegetation, sheeted vehicles, use of conveyor rather than dumpers, removal of dust from access road and haul routes, water for suppression of dust as necessary, low speed limits on site, avoiding windy periods for dust generating activities, material stockpiles being kept at a distance from residential properties, and a Dust Management Plan.

15.6.29 The Air Quality assessment uses nine receptor locations within 200m from the working area to assess dust emissions; one of which is ancient woodland but the remaining eight are residential properties, a school and commercial properties. The likely dust (PM₁₀) deposition at these properties has been assessed as negligible, taking into account wind frequency and direction, intervening screening and dust mitigation measures.

15.6.30 In terms of emissions from vehicle movements, receptors for assessment purposes have been identified at locations where members of the public are likely to be regularly present over the averaging period of the objectives. The receptors have been located on the façades of properties closest to the road sources, paying particular attention to those located close to junctions, where traffic may become congested, and there is a combined effect from several road links. The receptors are shown in the table below:

Receptor	Location	x	y	Z (m)
R1	108 Hamble Lane	447429.3	107835.4	1.5
R2	Rosegarth	447360.8	108468.0	1.5
R3	Threeways	447370.7	108700.4	1.5
R4	Melisande	447370.7	108726.7	1.5
R5	Pasadera	447379.4	108761.2	1.5
R6	Broxmoor	447689.8	110206.8	1.5
R7	1 Claremont Cottages	447671.1	110220.3	1.5
R8	6 St George Close	447752.7	110445.7	1.5
R9	43 Bowers Drive	447762.5	110675.3	1.5
R10	9 Jacobs Close	447773.4	110716.4	1.5

15.6.31 All of these receptors are located on or very close to Hamble Lane, with R1 being immediately south of the proposed access and the remaining receptors north of the access where HGVs will be routed from the site, with R10 being the furthest north.

15.6.32 The predicted impacts of NO₂, PM₁₀ and PM_{2.5} at these receptors has been assessed, with or without the development. The predicted annual mean concentrations for NO₂, PM₁₀ and PM_{2.5} in 2023, both with and without the

development are well below the Air Quality Assessment Level (AQAL) and have been assessed as negligible at all receptors.

- 15.6.33 Given the above information, it is clear that the impact of the proposal in terms of air quality emissions will be negligible, and as such no adverse impact on human health is likely to result as a result of impacts on air quality.

Transport (Chapter 13)

- 15.6.34 According to the World Health Organisation report ‘Health Effects and Risks of Transport Systems: the HEARTS Project’ (World Health Organisation, 2006), road traffic is a major cause of adverse health effects – ranking with smoking and diet as one of the most important determinants of health in Europe.
- 15.6.35 Traffic-related air pollution, noise, crashes and social effects combine to generate a wide range of negative health consequences, including increased mortality, cardiovascular, respiratory and stress-related diseases, cancer and physical injury. These affect not only transport users but also the population at large, with particular impact on vulnerable groups such as children and elderly people, cyclists and pedestrians.
- 15.6.36 Potential health pathways associated with the continued operation of the site include increased risk of road traffic accident and injury, and exposure to vehicle exhaust and noise emissions. The impact of vehicle emissions is set out above.
- 15.6.37 Chapter 13 has updated the personal injury accident history data within the vicinity of the site, which has been included at Appendix 7.2. This recorded 65 injury accident events within the study area, which comprises the extent of Hamble Lane to Windhover Roundabout to the north and Kings Avenue to the south, over the five-year period (January 2016-December 2020). Of these incidents, twelve were recorded as serious and 53 were slight. None were fatal.
- 15.6.38 Detailed review of the accident data illustrates that 16 of these accidents were reasonably close to the proposed site access, mostly at junctions, however none included any large vehicles. The accident data does not record any existing

highway defects or safety issues that would be exacerbated by the proposed development.

15.6.39 Chapter 10 has also considered environmental impacts associated with the proposed traffic movements from the site. This considered the impacts of severance, driver delay, pedestrian delay, pedestrian amenity, accidents and safety, hazardous loads and dirt on the highway. The impacts are considered to be negligible as a result of the development.

15.6.40 It is concluded therefore that the proposal will have a negligible adverse effect in terms of its impact from transport, and as such no harm to human health would arise as a result.

Visual Impacts (Chapter 9)

15.6.41 The visible landscape is believed to affect humans in many ways including impacts on health and well-being. A number of studies have linked health and well-being effects to exposure to visual landscapes. Generally, natural rather than urban landscapes have a stronger positive health effect, and such effects can include short term recovery from stress or mental fatigue, faster physical recovery from illness and long-term overall improvement on health and wellbeing.

15.6.42 Chapter 9 of the ES assesses the visual and landscape impacts as a result of the development, and has analysed the potential effects on the landscape and visual amenity associated with the proposal's design and operation. The Assessment Methodology from the Guidelines for Landscape and Visual Impact Assessment from The Landscape Institute were used in the assessment.

15.6.43 A number of receptors around the site have been assessed in terms of the impact on visual amenity. These include properties adjacent to the site in Hamble Lane, Satchell Lane, Tutor Close and Astral Close; the two schools and public rights of way.

15.6.44 Embedded and Additional Mitigation measures are proposed to minimise the landscape and visual impacts of the proposed development during both the preparation and operational phases of the scheme. These include:

- Further boundary advance hedgerow and tree planting.
- Retention, management, and supplementation of boundary vegetation.
- The design of the processing plant, minimising its height.
- Provision of grassed soil screen mounds for acoustic and visual screening.
- A phased scheme of working and restoration to reduce areas open at any one time.
- The design of the final restoration scheme to reinstate pastoral agriculture, and create new woodland, landscape, and conservation features in accordance with the principles set out in the Minerals Local Plan, and the Landscape Character Guidelines.
- Improvements to the condition of the existing Public Rights of Way Network.
- Provision of an additional length of permissive footpath as a safer alternative route to pedestrian use of part of the Satchell Lane public highway

15.6.45 Once all the mitigation measures as above are considered, the residual visual impacts upon surrounding receptors have been assessed to be of minor significance. The site restoration in the long term will result in a minor beneficial landscape impacts. The proposal will result in the creation of a permissive path at the start of the development, which will provide an area for recreation and encourage walking short distances, beneficial to human health. Site restoration will result in an area of public open space, which again is likely to encourage local exercisers and dog walkers.

15.6.46 It is therefore considered that, given that almost all the impacts during the operational phase are minor with the proposed mitigation, that the proposal will not have any significant impacts on human health. Upon restoration, there will

be a slight beneficial impact to landscape and visual amenity and as such will correlate to positive health effects.

15.7 Summary and Conclusion

15.7.1 The ES assesses the potential impact of the proposal in relation to the water environment, noise, air quality, transport, and visual impacts. These potential pathways to impacts on human health have been considered within this assessment and, drawing on the conclusions of Chapters 7 to 9, and Chapters 12 and 13, no significant adverse effects to human health have been identified as a result of the proposals.

16. VULNERABILITY TO ACCIDENTS & DISASTER

The following Technical Appendices to this chapter can be found at Appendix 8 to this document:

Appendices

Appendix 8.1 - Esso Pipeline location

Appendix 8.2 – Exolum Pipeline location

Appendix 8.3 – Gas Pipeline location

Appendix 8.4 - Unexploded Ordnance Risk Assessment

16.1 Introduction

16.1.1 Paragraph 4 (4) of the 2017 Regulations states that “significant effects to be identified, described and assessed under paragraph (2) include the expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to that development.”

16.1.2 Schedule 4 (8) of the 2017 Regulations also states that the following needs to be included within Environmental Statements:

“A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/ or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU(90) of the European Parliament and of the Council or Council Directive 2009/71/Euratom(91) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.”

16.2 Defining of Disaster and Accident

16.2.1 A Disaster is a hazard which has potential to incur community losses, encompassing assets, life, health and livelihoods, giving significance to disaster events at a personal and local scale. Disaster risk can also be defined as hazards which could cause a locality to require assistance from an outside state which could relate to international aid, or a local authority requiring assistance from another local authority.

16.2.2 Typically, disaster events refer to natural occurrences and are not defined to include events caused by humans. This gives reason to the inclusion of both terms ‘accident’ and ‘disaster’ within the Directive to ensure there is certainty

that both man-made and naturally caused events are considered within the EIA process

16.2.3 There is a wide variety of disasters which could occur, including;

- Fire;
- Flood;
- Earthquakes;
- Severe weather – rainfall, heavy snow, heat wave, high winds, lightning & drought;
- Landslides.

16.2.4 Accidents tend to be ‘man-made’ disaster risks, which can be either non-malicious or malicious, including;

- Industrial Accidents;
- Nuclear Accidents;
- Major Transport Accidents;
- Loss of critical infrastructure;
- Cyber-attacks;
- Terrorist attacks.

16.3 Probability of a Major Accident or Disaster

16.3.1 EIA requires the probability of potential impacts to be considered. Where the probability of an environmental impact is unlikely, having regard to the nature, scale and location of the proposed development, further assessment can be scoped out. Where the probability of an impact is likely, the EIA should assess the likely significance of the potential impact.

16.3.2 Having regard to the nature, scale and location of the Application Site, and its vulnerability to the accidents and disasters identified above, all of the potential

accidents and disasters can be immediately scoped out due to the low probability of these events occurring, with the exception of the following:

- Fire
- Flood
- Severe weather conditions including rainfall, high winds, heavy snow & freezing temperatures.
- Industrial accidents

16.4 Vulnerability of the Proposal to Major Accidents and/or Disasters

Fire

16.4.1 The location of the proposed quarry is within a semi-rural area, and the site borders residential properties, small areas of woodland, open land with hedgerows and trees along the boundaries, a railway line to the north with a school beyond, and an area of public open space to the south. The areas of woodland are not close to the plant site, which is the only area of the site which would be storing flammable materials, i.e. fuel for vehicles, however this would be stored in a bunded and sealed area. The likelihood of woodland fires directly adjacent to the site causing an accident or disaster scenario at the Application Site is considered therefore to be negligible and there is no evidence that the small patches of woodland surrounding the site have been subject to large fires in the past.

16.4.2 None of the operations proposed on site involve any burning of materials, and nor do they involve the storage of explosive materials. Safety procedures are however in place to minimise the likelihood of an accidental fire. In the unlikely event of a fire on site, procedures are in place to control and extinguish fire and the presence of fire extinguishers, water bowsers and large quantities of water on site help to reduce the chance of any small fire spreading. The likelihood of

a fire which could lead to a major accident or disaster is therefore considered to be negligible and the procedures put in place at the site to manage the risk of a fire would ensure it would not lead to a significant environmental effect.

Flood

16.4.3 Chapter 8 of the ES discusses the water environment and flood risk and Appendix 2.2 to the ES comprises a Flood Risk Assessment.

16.4.4 The Application Site lies within Flood Zone 1 and as such the risk of river and coastal flooding is low. Groundwater flood risk is considered to be low, given the depth of groundwater below the surface and the probability of surface water flooding is also considered to be low risk.

16.4.5 There are residential receptors as well as schools and commercial premises within close proximity to the site. Within the operational phase of the proposal, surface water run-off will be directed to new lagoons created in the northern part of the site at first, and then to the active quarry void during extraction. The run-off rates and volumes are predicted to decline during the operational phase, due to the large voids within the site that will hold water run-off. As such the flood risk to surrounding areas during extraction and infilling is reduced.

16.4.6 Post-restoration, the site has the potential to result in increased run-off, due to the inert restoration material potentially being less permeable than the existing sand and gravel. However, to manage this a drainage strategy is proposed which includes small drainage ponds within the site and infiltration trenches around the outside.

16.4.7 It is therefore concluded that, with the proposed mitigation upon restoration, the Proposal would not lead to significant environmental effects from flooding which could cause or be adversely affected by a major accident or disaster.

Rainfall

16.4.8 The standard average annual rainfall for the site is 767mm, which is below average for the UK. Rainfall experienced at the site is unlikely to lead directly to

significant environmental effects through a major accident or disaster. Resultant flooding is considered above.

High Winds

- 16.4.9 High winds have the potential to cause damage to buildings, plant and machinery and in severe cases, can knock down trees and lead to loose debris becoming airborne or being carried outside the Application Site.
- 16.4.10 The Application Site is likely to experience high winds from time to time. A dust and air quality assessment is contained within Chapter 12 of this ES, which considers the wind direction and frequency and impact on quarry operations, along with appropriate mitigation measures to reduce the risk of the proposal impacting on surrounding receptors as a result of wind. This assessment concludes that the proposal will not have any significant impacts with the mitigation measures proposed.
- 16.4.11 Very severe winds, which would only be experienced very occasionally, have the potential to cause damage to quarry assets, knock down trees within and adjacent to the site and lead to debris such as tree branches or aggregate stocks becoming airborne. The plant site is located away from the site boundaries such that if any wind damage was caused, it is very likely to affect anyone or anything outside the site.
- 16.4.12 CEMEX is dedicated to health and safety which is critical to business operations, and effective health and safety management procedures on site further reduces the risk of accidents on site due to high winds. It is therefore concluded that the Proposal would not lead to significant environmental effects from high winds which could cause a major accident or disaster.

Heavy Snow & freezing temperatures

- 16.4.13 Snow and freezing temperatures may occur regularly at the Application Site during winter periods. During extreme conditions, due to operational reasons, operations could be postponed. However, heavy snow and freezing

temperatures are very unlikely to result in the Proposal creating a significant environmental impact through a major accident or disaster.

Industrial Accidents

- 16.4.14 It is CEMEX's corporate policy to give the highest priority to preventing incidents and safeguarding the health and safety of the workforce, and being fully committed to carrying out business operations in a safe and efficient manner, as well as caring for the wellbeing of all those on CEMEX sites and others who may be impacted by CEMEX's activities.
- 16.4.15 Management at all levels demonstrates visible health and safety leadership, ensuring that health and safety arrangements are clear, implemented and constantly reviewed. There are documented plans in place throughout the various levels of the business that detail health and safety targets, which are formally monitored, to ensure they deliver continuous improvement. Employees receive comprehensive training and development programmes in health and safety competency for their role within the business and CEMEX aims to be at the forefront of industry practice in health and safety. Health and safety controls are put in place at the outset of any new venture in the business, including a new site such as proposed at Hamble.

Pipelines

- 16.4.16 At Hamble, there are two underground fuel pipelines and a gas main pipeline within or close to the site boundary. These are shown on the Proposed Site Plan, and separately in the approximate locations on Appendices 8.1 – 8.3. The Exolum pipeline runs close to the north-east corner of the site and the far eastern corner, before running along the eastern boundary of the site, adjacent to the rear of existing residential properties. The Esso pipeline runs along the eastern boundary of the site following approximately the site boundary and along a short distance of the southern boundary north of the Pavilion. The Gas Main pipeline runs along the eastern boundary in a similar location.

16.4.17 The scheme has been designed with a significant stand-off between extraction and these pipelines to prevent any issues with pipeline stability or safety. The minimum standoff from the extraction area and the pipeline along the eastern boundary where both pipelines are is 41m, with a 20m standoff to the outer bund. Along the southern boundary, the extraction area would be at least 44m from the pipeline, with a 20m standoff to the outer bund. The gas pipeline also runs along the northern boundary, and again there is a 20m standoff to the bund and 40m to the extraction area. As such the extraction area will be kept at a distance from the pipeline, with no soil bunds placed on top of the pipeline.

16.4.18 CEMEX will work with the pipeline owners prior to commencing any extraction on site to ensure the safety and stability of the existing pipelines during the proposal.

Unexploded Ordnance and Bombs

16.4.19 The site was a former airfield and as such a specialist survey by Safelane Global has been carried out of the site to check for unexploded ordnance (UXO) and unexploded bombs (UXB) below the site surface (see Appendix 8.4). The report explained that Southampton and the wider area sustained a high density of bombing during WWII, due to the extensive port infrastructure and ship building industries, including the Supermarine Works, which occupied the North Airfield of RAF Hamble. As such the site was a strategic bombing target, along with the aircraft manufacturing factory in the South Airfield. It is also possible that its use by aircraft manufacturers would have resulted in explosive ordnance being stored on site, although there is no evidence of waste disposal such as burying UXO.

16.4.20 The survey states that within the footprints of the post-war redevelopment/ground works to comprise the airfield, the risk of shallow buried UXO will have been partially mitigated due to soil stripping and levelling of the site, but there is a risk from deeper buried UXO/UXB. Overall the risk of encountering UXO/UXB is considered to be medium.

16.4.21 The mitigation measures proposed are as follows:

- Site Specific Explosive Ordnance Safety and Awareness Briefings to all personnel conducting intrusive works
- The provision of Unexploded Ordnance Site Safety Instructions
- Explosive Ordnance Disposal Engineer presence on site as required
- Non-Intrusive Magnetometer Survey and Target Investigation to locate buried objects

16.4.22 It is considered that subject to the above actions being undertaken prior to extraction, this minimises as far as possible any risks associated with unexploded bombs and ordnance on the site. The applicant would also adhere to other health and safety legislation in its operation of the site, including the Construction Design and Management Regulations 2015 and the Quarry Regulations 1999. As such the risks in relation to this are already covered by other legislation separate to planning.

16.5 Summary and Conclusion

16.5.1 The Proposal is not considered to be highly vulnerable to accidents or disasters as a result of the nature of operations proposed within the Application Site. Whilst there are pipelines on the edges of the site, large stand-offs between the pipelines and the extraction area has been designed into the scheme to mitigate any risk. There is a medium risk of unexploded ordnance/bombs due to the site history, however robust mitigation as set out above will be put in place to deal with the risk.

16.5.2 Therefore, no likely significant effects on the environment have been identified as result of potential accident and disasters affecting the Proposal.

17. CLIMATE CHANGE AND SUSTAINABILITY

17.1 Introduction

17.1.1 Paragraph 4 (5) of the 2017 Regulations requires that “*a description of the likely significant effects of the development on the environment resulting from, inter alia: (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change*”.

17.1.2 It is also considered necessary to consider the sustainability of the proposal.

17.2 Definition of Climate Change, Sustainability and Sustainable Development

17.2.1 Climate change is defined as a change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.

17.2.2 The definition of sustainable development is “*economic development that is conducted without depletion of natural resources*”, and similarly sustainability is “*the ability to be maintained at a certain rate or level*” and “*avoidance of the depletion of natural resources in order to maintain an ecological balance*”.

17.3 Planning Policy

Climate change

17.3.1 The NPPF states in paragraph 152 that the planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change., and that it should help to shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience.

- 17.3.2 Paragraph 154 states that that new development should be planned for in ways that avoid increased vulnerability to the range of impacts arising from climate change. Care should be taken to ensure that risks can be managed through suitable adaptation measures and that development can help to reduce greenhouse gas emissions.
- 17.3.3 Hampshire County Council declared a climate change emergency in June 2019, and two targets were set which are to be carbon neutral by 2050 and preparing to be resilient to the impacts of temperature rise. Policy 2 (Climate change mitigation and adaptation) of the Hampshire Minerals and Waste Plan states that minerals and waste development should minimize their impact on the causes of climate change. Where applicable, minerals and waste development should reduce vulnerability and provide resilience to impacts of climate change by being located and designed to help reduce greenhouse gas emissions and the more sustainable use of resources; or developing energy recovery facilities and to facilitate low carbon technologies; and avoiding areas of vulnerability to climate change and flood risk or otherwise incorporate adaptation measures.
- 17.3.4 The supporting text to Policy 2 states that minerals and waste development can provide opportunities to mitigate and adapt to the inevitable effects of climate change and this may include, relevant to this proposal, appropriate restoration of quarries, and the location of development adjacent to local markets which may provide opportunities to reduce emissions from, or created by transport. It also states that resilience means capacity for the environment to respond to changes by resisting damage caused by mineral and waste development and recovering quickly. This can be achieved by maintaining a robust and varied network of natural environments which will allow natural processes to change and adapt without costly intervention.
- 17.3.5 Policy 34.ES of the Eastleigh Borough Local Plan 2001-2011 states that planning permission will only be granted for proposals which make an appropriate contribution towards the Government's target to reduce levels of carbon dioxide and other greenhouses gases in the atmosphere.

Sustainable Development

- 17.3.6 The NPPF in paragraph 8 considers sustainable development to have three overarching objectives, which are economic, social and environmental. The economic objective is concerned with helping to build a strong, responsive and competitive economy; the social objective to support strong, vibrant and healthy communities, and the environmental objective to contribute to protecting and enhancing the natural, built and historic environment.
- 17.3.7 Paragraph 11 sets out the presumption in favour of sustainable development, meaning that for decision taking this means approving development proposals that accord with an up to date development plan without delay; or where there are no development plan policies, or the policies which are most important are out of date, granting permission unless the application of policies in the NPPF that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in within the NPPF taken as a whole.
- 17.3.8 Paragraph 177 states that the presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site, either alone or in combination with other plans or projects, unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of a habitats site.
- 17.3.9 Policy 1 (Sustainable Development) of the Hampshire Minerals and Waste Plan 2013 follows this approach, taking a positive approach to minerals and waste development that reflects the presumption in favour of sustainable development contained in the NPPF. Development that accords with the Plan is considered to be sustainable and will be approved unless material considerations indicate otherwise.

17.4 Impact of the project on climate change and vulnerability to climate change

17.4.1 The proposed development is described above in section 6. This proposal has the potential to be affected by, and to affect climate change, in the following ways:

- Flood risk
- Vehicle emissions
- Use of renewable energy
- Site location relative to market
- Changes to habitat

Flood Risk

17.4.2 The site is wholly within Flood Zone 1 and as such complies with the policies which seek to direct development to areas with the lowest risk of flooding. Climate change has been fully taken into account in Chapter 8 of the ES in respect of flooding. The Flood Risk Assessment (Appendix 2.2) addresses flood risk to the site in Section 5, and in paragraph 5.7 states that there is over 10m elevation between the minimum site elevation and flood levels from the rivers and sea at present. This is well above any expected rise in sea level rise, and extreme wave height of peak river flow in the area over the duration of the development, as defined in the EA guidance for climate change allowances.

17.4.3 The impact of climate change on the flood risk from the proposed development to the surrounding area is considered in Section 7 of Appendix 2.2. Projections of future climate change in the UK suggest that short-duration, high-intensity rainfall and periods of long duration rainfall will become more frequent, which needs to be accounted for in calculating off-site flood risk.

17.4.4 Future climate change has been accounted for in run-off calculations with an increase of 10% applied to the rainfall for the anticipated duration of extraction,

and a 40% increase to rainfall applied for the restoration phase. applied to the rainfall in accordance with the NPPF. The FRA concludes that the proposed development would result in reduced off-site run-off rates during the operational period given the large voids created within the quarry itself where the water would be directed to. Post-restoration, the surface water run-off will be mitigated by a Sustainable Drainage Strategy which includes pond features within the site and infiltration trenches on the boundary.

- 17.4.5 It is therefore considered that climate change has been fully accounted for in the flood risk calculations and it has been demonstrated that the proposal has been made resilient to climate change and will not increase the risk of off-site flooding should rainfall increase in line with climate change predictions.

Vehicle emissions

- 17.4.6 CEMEX fleet drivers are trained in Safe and Fuel-Efficient Driving (SAFED) scheme and are regularly assessed on their fuel usage and driving style, in order to reduce the quantity of fuel used and as such, carbon dioxide and other emissions accordingly. CEMEX also runs a dedicated programme called Be CareFUEL focussing on all aspects of fuel usage including a general awareness campaign, fuel saving information in driver handbooks, MPG reports by driver, vehicle, type and locations, allowing for specific targeting of areas for improvement.
- 17.4.7 A 50% bio-diesel fuel blend is also being trialled and subject to outcomes may be rolled out across the business. CEMEX also focus on logistics planning to maximise payload and minimise empty running vehicles, decreasing overall journeys.
- 17.4.8 CEMEX's own fleet of vehicles are on average under 5 years old and are constantly being replaced in order to ensure the operation of modern, clean and fuel-efficient vehicles. Over 20% of the fleet meets Euro IV or higher standards, with the majority of the remaining fleet exceeding Euro III standards.

- 17.4.9 The proposed use of the site will result in additional vehicle movements to and from this site compared to the current situation, and as such, associated emissions which can impact on climate change. This is a short-term and temporary impact. However, these are being minimised as far as possible using the above measures, to prevent impacts on climate change, and impact of this on air quality has been assessed in Chapter 8 to be negligible. There are no viable alternatives to this transport method from this site.
- 17.4.10 Minerals can only be worked where they are found and each county has a requirement set by Government to maintain a landbank of sand and gravel. This site has been through a process in the drafting of the Hampshire Minerals and Waste Plan 2013 of comparing the site to others, and this was found to be the most sustainable location. The site is not located close to any other sand and gravel sites and is needed in addition to wharves to maintain the supply of sand and gravel in Hampshire. The location of this site will prevent vehicles travelling from further afield to bring the mineral to this area, and this is discussed in more detail below.

Site location relative to market

- 17.4.11 The site at Hamble is well located relative to its market and as such will result in a sustainable source of supply to the local area. The location of active quarries in Hampshire in 2018 (taken from the 2019 LAA which is the most recent) shows that there are no other quarries in close proximity to this site, with the nearest by road being Marchwood Quarry, over 13 miles away on the other side of Southampton close to the New Forest. Most of the quarries in Hampshire are clustered around the south-west, and as such this site is better placed to serve the markets in the Hamble area and the urban market areas on the eastern side of Southampton, towards Portsmouth and Waterlooville, given the close proximity of the site to the M27. It will therefore reduce transport time and road miles currently travelled by HGVs to reach sites in the local area, thereby reducing vehicle emissions as well as associated noise and air quality impacts overall.

Habitat change and impact on species

- 17.4.12 Climate change is leading to loss of species, which have to adapt to new climate patterns and loss of habitat, as well as altered competitive relationships between species. DEFRA's 2020 Biodiversity Strategy states that over 40% of priority habitats and 30% of priority species were declining in the most recent analysis.
- 17.4.13 The site is not covered by any nature conservation designations, however it is close to a number of designated sites, which are the Solent and Southampton Water Special Protection Area (SPA) and Ramsar and the Solent Maritime Special Area of Conservation (SAC), all of which are located approximately 340 metres to the east of the site at their nearest point. The River Hamble, which lies approximately 410 metres to the east of the site at its nearest point, also forms part of the Solent and Dorset Coast SPA. The closest national, statutory designated sites include the Lee-On-The Solent to Itchen Estuary Site of Special Scientific Interest (SSSI) and Mercury Marshes Local Nature Reserve (LNR), which both lie 340 metres to the east, and Lincegrove and Hackett's Marshes SSSI which lies 350 metres to the north-east. All of these national, statutory designated sites also form constituent parts of the above international designated sites.
- 17.4.14 In terms of the habitats on site, these comprise mainly semi-improved grassland, scrub, native hedgerows, broadleaved woodland and scattered trees. All are considered to be of local importance only. The boundary vegetation is proposed to remain during working, with a large stand-off to the bund and extraction area, with a fence installed to protect retained trees from the working area.
- 17.4.15 Whilst habitats within the extraction area would be lost as a result of the working, this loss would be phased and the site progressively restored as it is worked. The habitats to be replaced on the site would be of significantly greater biodiversity value; over 10% for the site as a whole in terms of habitats, and a gain of over 130% in terms of hedgerows. As such the impact on habitats would be an improvement in biodiversity terms following the proposed development.

17.4.16 In terms of on-site species, a suite of ecological surveys has been undertaken. Mitigation measures are proposed for badgers, bats, breeding birds, hedgehogs and invertebrates, in terms of enhancement of vegetation, precautionary measures during working and sensitive timing of works to avoid harm. There is a large population of reptiles (slow worm and common lizard) which has been identified on site, and a more detailed mitigation strategy has been designed to prevent harm to these reptiles during the operation of the site. The measures include trapping and relocating the reptiles within the site as the operations progress, moving them to unworked and to restored phases, as well as the site margins. Once the site has been restored, with increased biodiversity gain to the habitats, it is expected that the on site species will increase as a result of the improved site habitat.

17.4.17 In terms of affecting off-site European designated habitats, this has been assessed in a Habitat Regulations Assessment (Appendix 4.2). The HRA states that whilst the development has potential to cause disturbance to feeding birds, the proposed mitigation in the form of the earth bund and stand-off will reduce noise levels such that disturbance to waders, ducks, geese and turns is highly unlikely to occur. The HRA concludes that the proposals will not have an adverse effect on the integrity of the designated sites, either alone or in combination with other plans and projects.

Use of renewable energy and other energy saving initiatives

17.4.18 CEMEX uses 100% renewable electricity at all UK sites, in partnership with energy group Engie. The energy that will supply Hamble comes from 100% renewable sources including wind and solar energy.

17.4.19 CEMEX also are looking at a wide range of energy initiatives and ideas that can be rolled out across sites. For Hamble, these could include:

- Solar panels and wind turbines to generate energy

- Energy monitoring using Power Bi dashboards to track energy usage and electric monitoring sensors on equipment to see energy usage
- Car EV charging points
- Condition monitoring sensors, which ensure the plant is running efficiently therefore reducing energy usage
- Mobile plant telemetry sensors to monitor fuel usage and efficiency to reduce fuel wastage
- Energy saving opportunities such as using LED lighting and solar powered lighting with motion sensors
- Lower level external lighting towers to reduce power consumption and associated cost
- Use of timers on equipment so they are only running when required

17.4.20 If the site is granted planning permission, this will be considered further in terms of what can be installed on the site, and some measures may be imposed through planning conditions.

17.5 Whether the proposal is sustainable development

17.5.1 The location of the site has been through a process of site sifting and assessment during the preparation of the Hampshire Minerals and Waste Plan 2013, which concluded that the site was the best option for providing a local supply of sharp sand and gravel for this part of south Hampshire. The proposal to extract mineral at this site has been through a process of Environmental Impact Assessment and it is considered that working the site is possible without having any significant adverse impacts on the environment or amenity.

17.5.2 According to Hampshire's latest Local Aggregate Assessment, the County's landbank is below 7 years, only rising just above this if current applications within awaiting decision are granted. Current data also shows that many sites within

the County will be exhausted by 2025 unless further sites/extensions come forward, and the Mineral Planning Authority has to plan ahead to maintain the landbank for the plan period.

- 17.5.3 The LAA also states that a significant increase in planned infrastructure has been identified in the medium term. There are a number of housing and transport projects planned which are expected to manufacture increased aggregate demand within Hampshire. These include in the region of 120,000 new homes planned within Hampshire over the next 15 years, a number of bypass projects planned or under construction including Stubbington and Botley, junction improvements and upgrades to the M27 and the Junction 9 improvement to the M3. The County Council also have a number of highway improvement schemes planned.
- 17.5.4 The location of the site will also result in a sustainable source of supply to the local area. The location of active quarries in Hampshire in 2018 (taken from the 2019 LAA which is the most recent) shows that there are no other quarries in close proximity to this site, with the nearest by road being Marchwood Quarry, over 13 miles away on the other side of Southampton close to the New Forest. Most of the quarries in Hampshire are clustered around the south-west, and as such this site is better placed to serve the markets in the Hamble area and the urban market areas on the eastern side of Southampton, towards Portsmouth and Waterlooville, given the close proximity of the site to the M27. It will therefore reduce transport time and road miles currently travelled by HGVs to reach sites in the local area, thereby reducing vehicle emissions as well as associated noise and air quality impacts overall.
- 17.5.5 It is therefore clear that the extraction of the mineral at this site is required to continue to supply local construction projects with the necessary sand and gravel. The location of the site has already been considered sustainable at the time of its allocation in the plan, and this Environmental Impact Assessment has demonstrated that the site can be worked without significant adverse impacts on the environment.

- 17.5.6 The proposal would result in economic and social benefits, given the revenue generated by the quarry in terms of aggregate levy, business rates and job creation, and the supply of mineral to the local area for construction projects including housing and schools which has a significant social benefit. The quarry has significant environmental benefits upon restoration in terms of additional biodiversity gain.
- 17.5.7 For these reasons, it is considered that the proposal constitutes sustainable development.

17.6 Conclusion

- 17.6.1 The 2017 Regulations introduced a requirement to take into account climate change in Environmental Statements, in terms of a proposal's impact on climate change and its vulnerability to the effects of climate change.
- 17.6.2 It is considered that the proposal has the potential to impact on climate change through the effects of flood risk, vehicle emissions, energy consumption, location relative to market and the impact on habitats and species. However, it is concluded that the site minimises its impacts on climate change as far as possible, and given its location relative to the market, it prevents less sustainable vehicle movements bringing the material from further afield.
- 17.6.3 It is also considered that the proposal constitutes sustainable development, given that the mineral is required by Hampshire to maintain their landbank, and to supply housing, infrastructure and other building projects in the Hampshire area. There are no other quarries nearby and the site is needed in addition to wharves to provide sufficient sand and gravel to Hampshire. The proposal will have economic and social benefits, in terms of the revenue generated and local job creation particularly, as well as allowing public access to parts of the site during operational and restoration periods. There are no significant adverse environmental effects during the operational period of the development and the proposal will have environmental benefits in terms of its restoration and the net gain in biodiversity.

17.6.4 It is therefore considered that the proposal constitutes sustainable development and its impact upon, and vulnerability to, climate change has been fully taken into account and minimised as far as possible.

18. SUMMARY AND CONCLUSIONS

18.1 Introduction

18.1.1 This Environmental Statement has been put together by professionally qualified competent persons in their relevant fields, and has assessed the impact of the proposals upon the following matters:

- Noise (Chapter 7)
- Water Environment and Flood Risk (Chapter 8)
- Landscape and Visual Impact (Chapter 9)
- Ecology (Chapter 10)
- Archaeology (Chapter 11)
- Air Quality (Chapter 12)
- Transport (Chapter 13)
- Implications of No Development Scenario (Chapter 14)
- Human Health (Chapter 15)
- Vulnerability to Accidents and Disaster (Chapter 16)
- Climate Change (Chapter 17)

18.2 Conclusions

Noise (Chapter 7)

18.2.1 The noise chapter sets out the findings of the noise assessment. Current guidelines on noise are contained in the web-document “*Planning Practice Guidance*” for Minerals, first published in March 2014.

18.2.2 Site noise limits for the dwellings in proximity to the proposed quarry are suggested, based on the guidance contained within the Planning Practice Guidance for Minerals having regard to the measured background noise levels

at locations taken to be representative of the dwellings selected for this assessment.

- 18.2.3 Site noise calculations have been undertaken for six noise sensitive locations, taken to be representative of Hamble School and the nearest dwellings to the proposed quarry. The calculated site noise levels are presented for inspection and comparison with the suggested site noise limits at the receptors and demonstrate compliance with the suggested site noise limits at all nearest noise sensitive properties.
- 18.2.4 The calculated site noise levels for routine and temporary operations at the proposed quarry comply with the suggested site noise limits at all the assessment locations.
- 18.2.5 The impact of site noise on the Rail Trail public footpath to the south of the site and the SPA/SAC and Ramsar areas in the vicinity of the site has also been considered.
- 18.2.6 Since the proposed operations conform to the advice set out in the Planning Practice Guidance for Minerals with regard to both routine and temporary operations, it is considered that the site can be worked while keeping noise emissions to within environmentally acceptable limits.

Water Environment and Flood Risk (Chapter 8)

- 18.2.7 The hydrogeology and hydrology chapter considers the potential hydrological and hydrogeological impacts associated with the proposed excavation of sand and gravel, together with progressive restoration of the site using existing overburden and imported inert restoration materials.
- 18.2.8 The Site lies on an interfluvium with surface water shed to the east towards the River Hamble and west towards Southampton Water. A small spring is present to the west of the Site at the head of a small stream that discharges to Southampton Water.

- 18.2.9 The Site is underlain by River Terrace Deposits (RTD) overlying clayey material comprising the Marsh Farm Formation (MFF) and sandier material comprising the Selsey Sand Formation (SSF). Given the Site's position on the interfluvium, there is relatively little groundwater present within the RTD.
- 18.2.10 An impact assessment has been undertaken of the proposed excavation and subsequent restoration with imported inert restoration materials. A number of embedded mitigation factors are taken into account and the impact assessment suggests that there will be no significant impacts on groundwater, surface water or the spring feature.
- 18.2.11 A number of additional mitigation, compensation and enhancement measures are proposed to ensure that impacts from the Site are not significant.
- 18.2.12 Groundwater monitoring for level and quality will continue at the existing Site perimeter monitoring wells for a period of time post restoration to confirm that the Site is not having an impact on groundwater or surface water.

Landscape and Visual Impact (Chapter 9)

- 18.2.13 The application site lies within the Netley, Hamble and Bursledon Coastal Plain Landscape Character Area (LCA), and interfaces with the Hamble River Valley LCA to the east. The surrounding landscape character is of a Coastal Plateau; a level topography bisected by small valleys draining into the Solent to the south-west and the Hamble River to the east. Road and field patterns across the plateau are regular, and the landscape south of the railway is semi enclosed by dense mature woodlands around Royal Victoria Country Park parkland to the west and Badnam Copse to the north-east. North of the railway former market garden land is becoming increasingly degraded by equestrian use and new housing development.
- 18.2.14 This former airfield landholding landscape fabric is poorly managed, being ungrazed but with some mature remnant boundary hedgerows and linear woodland features; the former airfield chain-link fences are in a poor state of

repair. Whilst the landscape is likely to be locally valued, it is not designated at a national or local level. In addition, there are some significant detracting features within the surrounding area, with the proximity to the rail corridor, the visual intrusion within the landscape of the oil refineries at both Hamble and Fawley, the Southampton flight paths and more distant background traffic noise from the busy M27 and A35 corridors. The **Landscape Sensitivity** for this semi-enclosed area is therefore **Medium to Low**.

- 18.2.15 In the short term, the development will temporarily alter the surrounding landscape character, with the establishment of a temporary mineral processing plant site for seven years, the establishment of additional temporary soil storage and screen mounds, internal conveyor and haul routes and areas of mineral extraction and infilling, being followed by restoration on a phased basis. The total duration of the development is expected to be thirteen years including the period for the importation of restoration materials.
- 18.2.16 The working and restoration scheme for the site has been designed to retain and protect the greater proportion of mature trees and existing hedgerows, with the removal of only three mature trees and a small area of the western boundary scrub margin to create the site access, and the removal of a small area of mature scrub in the south-east sector of the proposed working area.
- 18.2.17 The restoration will provide substantial additional peripheral woodland and hedgerow planting both as advance planting and at final restoration forming a medium to large scale field pattern, together with small ponds and wetter areas, and areas of new acid grassland.
- 18.2.18 A total of 20,080 trees and shrubs will be planted, using native species found within the local area, creating enhanced nature conservation corridors as part of the site restoration proposals. The woodland, grassland, wetland, and hedgerow creation will integrate the restored landform into the surrounding landscape; the public rights of way network will be enhanced to enable them to be more useable and extended by a short length of permissive path.

- 18.2.19 In the long term, the application site and its surroundings will benefit from an increase in native tree and shrub cover, and supplementary and replacement hedgerow planting that will reinforce existing boundaries and provide enhanced linkages across the restored landform. The **magnitude of landscape impact** for the application area post restoration is generally **Low – Negligible**, with the greater part of the application area being restored to original ground levels and under a similar agricultural regime. The overall **landscape impact significance** of the site restoration in the longer term is therefore **Minor-Neutral Beneficial**.
- 18.2.20 There are properties or publicly accessible viewpoints at the site boundaries from which views of the proposed mineral development area can be obtained. However, direct, open, proximate, extensive, or prolonged views of the application area from properties and public rights of way are mainly limited to the proposed soil storage mounds at the operational periphery.
- 18.2.21 Embedded and Additional Mitigation measures are proposed to minimise the landscape and visual impacts of the proposed development during both the preparation and operational phases of the scheme. These include:
- Further boundary advance hedgerow and tree planting.
 - Retention, management, and supplementation of boundary vegetation.
 - The design of the processing plant, minimising its height.
 - Provision of grassed soil screen mounds for acoustic and visual screening.
 - A phased scheme of working and restoration to reduce areas open at any one time.
 - The design of the final restoration scheme to reinstate pastoral agriculture, and create new woodland, landscape, and conservation features in accordance with the principles set out in the Minerals Local Plan, and the Landscape Character Guidelines.

- Improvements to the condition of the existing Public Rights of Way Network.
- Provision of an additional length of permissive footpath as a safer alternative route to pedestrian use of part of the Satchell Lane public highway.

18.2.22 Once all the mitigation measures are considered, the residual landscape and visual effects of the development will be of **Minor** significance.

18.2.23 Views from the Conservation Areas, Listed Buildings and Registered Parks and Garden around the site which would be potentially affected by the proposed development are of **Minor** significance.

18.2.24 Enhanced nature conservation corridors will be created as part of the site restoration proposals. Significant areas of new woodland planting, hedgerows, and acid grassland seeding will be created to integrate the restored landform into the surrounding landscape, and the footpath will be extended by permissive paths around the edges of the site to provide safer routes connecting existing paths, Hamble Railway Station and The Hamble School.

18.2.25 Any anticipated long term residual landscape and visual effects of the proposals are likely to be minimal.

Ecology (Chapter 10)

18.2.26 It is concluded that the proposed project is only likely to have short-term adverse effects during the operational and restoration phases, mainly resulting from the temporary losses of habitat and associated disruption caused to species of fauna which use the site. It is considered that an optimal level of embedded ecological mitigation is being proposed for the operational phases of the project and any unavoidable, short-term adverse ecological effects will be controlled at an acceptable level and then soon offset in the post-restoration period. Any adverse effects during the operational phases should also be counterbalanced to some

degree by the predicted positive effects in relation to native hedgerows and off-site habitats.

18.2.27 The proposed restoration plan for the site is expected to have an overall positive long-term effect in terms of the biodiversity value of the site itself, the effects on identified ecological features within the ZOI, and the site's ecological connectivity and functionality within the surrounding landscape.

Archaeology (Chapter 11)

18.2.28 A wide range of sources were consulted for this assessment, including the local Historic Environment Record, published articles and books and manuscript documents. In addition, the site has been visited for a visual inspection. The data gathered has provided the information required with which to make an initial assessment of the impact of the development proposals of the archaeological and historic landscape.

18.2.29 The assessment of direct impacts on archaeology and cultural heritage assets within the proposed development boundary shows that there will be an impact to:

- 1) Potential archaeological features as identified on the Council HER across parts of the site.
- 2) Aspects relating to the former military Hamble Airfield.
There is also a suggested impact to:
- 3) Presently unrecorded archaeological remains that may exist elsewhere on the Site.

18.2.30 It is therefore proposed to undertake appropriate archaeological investigation of the site prior to mineral extraction. Such works are proposed to be carried out across each quarry phase prior to workings commencing in that particular location. In the event that archaeological remains are identified, an appropriate

level of archaeological investigation and recording to mitigate any potential impact to any identified remains will take place.

- 18.2.31 Any such works can be secured through the imposition of a suitably worded planning condition. The works would be agreed with the Council Archaeological Office and be carried out in full accordance with approved WSIs. The WSIs will detail the undertaking of appropriate works to allow for a full and proper record of any archaeological remains within areas of proposed development to be made. These works will mitigate any perceived impacts to the archaeological resource.
- 18.2.32 The assessment of indirect impacts on all cultural heritage assets within the study area shows that the proposed quarry will have a low magnitude of change of a temporary nature to a small part of the Bursledon Conservation Area (western extent of Character Area 2), being a Medium sensitivity receptor. Assessment identifies the predicted impact to be of Minor Significance, which does not equate to an impact requiring mitigation. Nevertheless, the creation of soil storage bunds which will be grassed over and placed along the site's NE boundary will afford an increased protection to the setting of this part of the Conservation Area whilst quarry operations take place. Quarry operations will also be temporary in nature, prior to approved restoration taking place. Following site restoration, any minor effect to the setting of the designation will be restored.
- 18.2.33 There are no other identified significant indirect effects on the archaeological and heritage resource as a result of the proposed development. The proposed quarry is not located within the primary setting of any additional surrounding cultural heritage asset. There may be changes to long distance and/or obscured views in some circumstances, but none of these changes are relevant to planned views or vistas from cultural heritage assets and those minor changes are not assessed as compromising the understanding or historic significance of any feature.

Air Quality (Chapter 12)

- 18.2.34 The operational impacts of increased emissions arising from the additional traffic on local roads due to the development have been assessed. Concentrations have been modelled at ten existing receptors, representing properties where the impacts are expected to be greatest. It is concluded that concentrations of NO₂, PM₁₀ and PM_{2.5} will remain below the AQALs at all existing receptors in 2023, whether the scheme is developed or not, and that the impacts will be negligible.
- 18.2.35 The operational phase dust risk assessment has determined that, with the designed in mitigation measures, the magnitude of the dust effect from the extraction of the minerals is also negligible.
- 18.2.36 Given that the impact of the proposed development is negligible, it is considered that the effects of the operation of the proposed development on air quality and dust will be insignificant.
- 18.2.37 There should be no constraints to the development of the site, with regard to the air quality and dust effects on local receptors, as the proposed development is consistent with the relevant parts of:
- The NPPF;
 - Policy 10 of the Hampshire Minerals and Waste Plan; and
 - Policy 32.ES and Policy 33.ES of the Eastleigh Local Plan Review (2001-2011).

Transport (Chapter 13)

18.2.38 This chapter has assessed the environmental effects of the predicted increases in traffic associated with the proposed development. The long-term operational effects of the development on the transport network and people will be negligible.

18.2.39 A summary of the assessment is tabulated in Table 13.16.

Table 13.16: Summary of Environmental Effects

Potential impact	Nature of impact	Significance prior to mitigation	Mitigation / Enhancement measures	Residual effect
Severance	Direct	Negligible	Environmental Management Plan and HGV Routing Management Plan	Negligible
Driver Delay	Direct	Negligible		Negligible
Pedestrian Delay	Direct	Negligible		Negligible
Pedestrian Amenity	Direct	Negligible		Negligible
Fear and Intimidation	Direct	Negligible		Negligible
Accidents and Safety	Direct	Negligible		Negligible
Hazardous Loads	Direct	Negligible		Negligible
Dirt on the Highway	Direct	Negligible		Negligible

Implications of No Development Scenario (Chapter 14)

18.2.40 It is concluded therefore that should the development not go ahead, the natural baseline of the site would continue to evolve with similar species as are currently there. The vegetation would likely be kept in check by some animal grazing and site management. Over time, if the site was completely unmanaged, eventually grassland may give way to pioneer tree species and eventually, over a very long

period of time the site may contain largely woodland. If the site was not worked, it is likely that the biodiversity value of the site would be less than is proposed through the restoration of the site. If mineral extraction did not go ahead it is also possible that other development eventually would, and this would sterilise the mineral resulting in it having to be imported from further afield.

Human Health (Chapter 15)

18.2.41 The ES assesses the potential impact of the proposal in relation to the water environment, noise, air quality, transport, and visual impacts. These potential pathways to impacts on human health have been considered within this assessment and, drawing on the conclusions of Chapters 7 to 9, and Chapters 12 and 13, no significant adverse effects to human health have been identified as a result of the proposals.

Vulnerability to Accidents and Disaster (Chapter 16)

18.2.42 The Proposal is not considered to be highly vulnerable to accidents or disasters as a result of the nature of operations proposed within the Application Site. Whilst there are pipelines on the edges of the site, large stand-offs between the pipelines and the extraction area have been designed into the scheme to mitigate any risk. There is a medium risk of unexploded ordnance/bombs due to the site history, however robust mitigation as set out above will be put in place to deal with the risk.

18.2.43 Therefore, no likely significant effects on the environment have been identified as result of potential accident and disasters affecting the Proposal.

Climate Change (Chapter 17)

18.2.44 The 2017 Regulations introduced a requirement to take into account climate change in Environmental Statements, in terms of a proposal's impact on climate change and its vulnerability to the effects of climate change.

- 18.2.45 It is considered that the proposal has the potential to impact on climate change through the effects of flood risk, vehicle emissions, energy consumption, location relative to market and the impact on habitats and species. However, it is concluded that the site minimises its impacts on climate change as far as possible, and given its location relative to the market, it prevents less sustainable vehicle movements bringing the material from further afield.
- 18.2.46 It is also considered that the proposal constitutes sustainable development, given that the mineral is required by Hampshire to maintain their landbank, and to supply housing, infrastructure and other building projects in the Hampshire area. There are no other quarries nearby and the site is needed in addition to wharves to provide sufficient sand and gravel to Hampshire. The proposal will have economic and social benefits, in terms of the revenue generated and local job creation particularly, as well as allowing public access to parts of the site during operational and restoration periods. There are no significant adverse environmental effects during the operational period of the development and the proposal will have environmental benefits in terms of its restoration and the net gain in biodiversity.
- 18.2.47 It is therefore considered that the proposal constitutes sustainable development and its impact upon, and vulnerability to, climate change has been fully taken into account and minimised as far as possible.

Cumulative impacts

- 18.2.48 Each chapter has assessed the likely cumulative impacts of the development, and they have considered the impact of this proposal, in conjunction with other nearby developments, including other nearby quarries and housing developments, both under construction and proposed; within a relative distance that could cause cumulative effects. The cumulative impacts have been built into the transport assessment, which the air quality assessment has relied upon in terms of emissions.

18.2.49 No chapters have identified any significant cumulative impacts, and this includes impacts in terms of noise, air quality, archaeology, ecology and transport.

18.3 Conclusion

18.3.1 The EIA process has demonstrated that the proposed development can be operated with no unacceptable effects on quality of life and the local environment, provided that the various mitigation measures recommended are implemented. The mitigation measures and further controls, as necessary, can be imposed via planning conditions and legal agreement.

18.3.2 The restoration proposals will bring long term positive enhancements to the area with ecological and biodiversity enhancements by way of the creation of UK and Eastleigh Biodiversity Action Plan priority habitats, which will attract a wide range of species, and result in a significant beneficial effect in ecological terms, and a beneficial impact upon the landscape. The restoration will also provide recreational benefits with a permissive path and recreation area. Restoration will be undertaken to high environmental standards in accordance with the requirements of the NPPF and Development Plan policies.

18.3.3 The temporary mineral extraction will not result in any long-term significant adverse impacts, and the few identified moderate and minor temporary adverse impacts are within acceptable levels as set out in the relevant guidelines.

18.3.4 Minerals can only be worked where they are found and where it is environmentally acceptable to do so. This site has been identified in the Hampshire Minerals and Waste Local Plan 2013 as the best option to supply this area of south Hampshire, and is required along with other land-won and marine sand and gravel to maintain a steady supply of sand and gravel to Hampshire.

18.3.5 The Environmental Statement has also addressed the impact of the development on climate change, and outlines the measures that CEMEX takes to ensure its operations reduce impacts on climate change and that the effects

of climate change are fully taken into account in terms of the assessment process.

- 18.3.6 Cumulative effects refer either to the incremental additional effects of more than one mineral operation in the vicinity or to the combined environmental effects of the proposed development with other intensive activities in the locality. No significant impacts have been identified during the environmental impact assessment process which indicate that approval of the proposed development will, in combination with other local activities taking place in the area, result in unacceptable harm to the environment or local amenities.
- 18.3.7 The Environmental Statement supports the planning application for the proposed sand and gravel extraction at the application site, and it is considered that sufficient information has been provided to allow the Minerals Planning Authority to conclude that the development is acceptable in environmental terms.