Proposed Extension of Grandcourt Quarry for the Extraction of Industrial Sand with Progressive Restoration to Nature Conservation (including herb rich grassland; woodland and lake margins) and

The Proposed Amendment to the Timing of Working and Restoration at Grandcourt Quarry, by Variation of Conditions 2, 3, 8 and 9 of Planning Consent C/2/2004/2034

GRANDCOURT QUARRY
NON-TECHNICAL SUMMARY (NTS)

July 2018
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NON TECHNICAL SUMMARY

1. INTRODUCTION

1.1 Preamble

1.1.1 This Non-Technical Summary (NTS) is a summary of an Environmental Statement (ES) submitted by Sibelco UK Ltd (the Applicant) to Norfolk County Council (NNC), as Minerals Planning Authority (MPA), in support of two planning applications for the proposed extension of industrial sand extraction and re-phasing of existing permitted workings at Grandcourt Quarry together with landscaping, access and associated works and restoration to lakes, wetland, woodland and agriculture (the Proposed Development) at Grandcourt Quarry, near East Winch, King’s Lynn, Norfolk.

1.1.2 The ES presents the findings of the Environmental Impact Assessment (EIA) undertaken in relation to the aforementioned Proposed Development and the continued use of the existing Leziate Processing Plant Site (the Plant Site). The ES has been prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended).

1.1.3 The aforementioned development relates to Sibelco’s Grandcourt Quarry, near East Winch, King’s Lynn, Norfolk.

1.2 Figures

1.2.1 The following Figures should be viewed alongside this NTS. These Figures are also appended to the ES (Volume 2) along with other detailed plans. A selection of the most relevant plans, as follows, is reproduced (not necessarily to scale) as part of this NTS for convenience of viewing (please note plan references may vary between this NTS and the ES):

- Figure NTS 1 - Site Location Plan
- Figure NTS 2 - Planning Application Boundary (Extension)
- Figure NTS 3 – Planning Application Boundary (S73)
- Figure NTS 4 - Proposed Quarry Development
- Figure NTS 5 - Extension Restoration Plan
- Figure NTS 6 - Restoration Masterplan
- Figure NTS 7 – Plant Site Layout Plan
1.3 Copies of the NTS

1.3.1 This NTS is available free of charge in electronic or hard copy from Sibelco. Please contact Nicola Cola by email: Nicola.cole@sibelco.com or by post:

FAO: Nicola Cole
Sibelco UK Ltd
Brookside Hall
Congleton Road
Sandbach
Cheshire
CW11 4TF

1.3.2 For any queries regarding this NTS or the development, please contact Sibelco or if you wish to comment on the development itself, contact the MPA: Norfolk County Council, County Hall, Martineau Lane, Norwich, Norfolk, NR1 2DH.
2. THE APPLICATIONS

2.4 The Applications

2.4.1 This NTS is a summary of an ES submitted by the Applicant to NNC in support of two planning applications titled as follows:

"Proposed extension of Grandcourt Quarry for the extraction of industrial sand
with progressive restoration to nature conservation
(including herb rich grassland; woodland and lake margins)"

And

"The proposed amendment to the timing of working and restoration
at Grandcourt Quarry, by variation of conditions 2, 3, 8 and 9
of Planning Consent C/2/2004/2034"

2.4.2 The two applications are therefore:

- a full (or new) planning application for the extension of quarrying operations at Grandcourt Quarry; and
- an application under section 73 of the Town and Country Planning Act 1990 (as amended) to amend the phased development of the present Grandcourt Quarry planning permission

2.4.3 The Applications relate to Sibelco’s Grandcourt Quarry and neighbouring land near East Winch, King’s Lynn, Norfolk (see Figure NTS 1 – Site Location Plan).

2.4.4 The Applications have been considered as in effect a single proposal (the Proposed Development) for the purposes of the EIA and a common ES has been produced in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended).

2.4.5 Whilst not the subject of any planning application, the ES also incorporates an assessment of the effect of the continued use of the existing Plant Site at Leziate. The Plant Site is located circa 1 km to the north west of the existing Grandcourt Quarry extraction area and processes sand supplied by Grandcourt Quarry and Holt House Quarry via a private, off-highway haul road as well as sand supplied from elsewhere off site. The operations at the Plant Site are therefore inextricably linked to Grandcourt Quarry and at the request of NCC the Plant Site has been included within the scope of the EIA as part of the overall ‘EIA scheme’.

Environmental Impact Assessment

2.4.6 The EIA has been carried out over a number of years leading up to the submission planning applications. The full details of the assessments carried out are set out in the
ES. The details of the Applications, setting out the nature of the Proposed Development and the plans that show the overall layout are provided in both the ES and the Planning Statement (PS).

2.4.7 The PS formed the basis of the development considered in the EIA process. It includes the recommendations arising from the assessment process in order to ensure that the Proposed Development is fully compatible with appropriate environmental standards and is acceptable in terms of any effect on the environment and the amenities of local people. The relevant recommendations (mitigation measures) arising as a result of the EIA are set out in detail in each section of the ES.

2.4.8 The ES and this NTS comply with the requirements set out in the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. In carrying out each of the assessments that make up the EIA, regard was had to any relevant “best practice” principles covering the relevant areas.

2.4.9 The EIA involved formal consultation and dialogue with Norfolk County Council and relevant statutory consultees both prior to and during the EIA process. Wherever practicable, all relevant comments made during this process were incorporated into the EIA and resultant ES.

2.4.10 The scope of the EIA carried out included the following key areas in relation to the Proposed Development and the continued use of the existing Plant Site as set out in Table 2.1.
Table 2.1 Scope of the EIA

<table>
<thead>
<tr>
<th>Topic</th>
<th>EIA Scope</th>
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<tbody>
<tr>
<td>Alternatives</td>
<td>Proposed Development and continued use of the Plant Site.</td>
</tr>
<tr>
<td>Soils</td>
<td>Proposed Development only, scoped out for the Plant Site as no land-take or movement of soils required for the continued use of the Plant Site.</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Proposed Development and continued use of the Plant Site.</td>
</tr>
<tr>
<td>Noise</td>
<td>Proposed Development and continued use of the Plant Site.</td>
</tr>
<tr>
<td>Landscape</td>
<td>Proposed Development and continued use of the Plant Site.</td>
</tr>
<tr>
<td>Cultural Heritage</td>
<td>Proposed Development. Assessment of Setting only for continued use of Plant Site as no land take required for continued use that would in turn have the potential to impact on archaeological assets.</td>
</tr>
<tr>
<td>Ecology</td>
<td>Proposed Development and continued use of the Plant Site.</td>
</tr>
<tr>
<td>Hydrology and Hydrogeology</td>
<td>Proposed Development only, scope out for the Plant Site as no changes proposed and so no likely significant effect on surface water or groundwater.</td>
</tr>
<tr>
<td>Flood Risk</td>
<td>Proposed Development and continued use of the Plant Site.</td>
</tr>
<tr>
<td>Transport</td>
<td>Proposed Development and continued use of the Plant Site.</td>
</tr>
<tr>
<td>Arboriculture</td>
<td>Proposed Development and continued use of the Plant Site. Scope of assessment for the Plant Site agreed with NCC – full BS5837:2012 tree survey not required.</td>
</tr>
<tr>
<td>Lighting</td>
<td>Continued use of Plant Site only. Lighting scoped out for Proposed Development as no lighting requirements.</td>
</tr>
<tr>
<td>Population and Human Health</td>
<td>Proposed Development and continued use of the Plant Site.</td>
</tr>
<tr>
<td>Climate Change</td>
<td>Proposed Development and continued use of the Plant Site.</td>
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<tr>
<td>Socio-Economic</td>
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<tr>
<td>Cumulative Effects and Interactions</td>
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</tr>
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2.11 Each of section of the ES seeks to follow a consistent format setting out a description of the methodology adopted; a description of the existing situation particularly with respect to key environmental characteristics; a review of the likely potential effects arising from the development without any mitigation; the recommended mitigation measures if any
are needed to modify the development to ensure its effects are acceptable and; a review of any residual effects and overall conclusions.

2.12 Where appropriate, the EIA considered possible alternatives to the methods and proposals and where these offered an improvement over the development proposed, changes were made to the Proposed Development and the actions were noted as recommendations in the ES.

2.13 Each section of the ES was compiled by consultants, in-house staff or advisors who are specialists in the various disciplines studied, the full details of which are included at Section 1a of the ES.
3. THE PROPOSED DEVELOPMENT

Site Location and Description

3.1 The proposed quarry extension site lies approximately 7 km south east of King’s Lynn, the main town in West Norfolk and is adjacent to and to the north of the A47 (T), Kings Lynn to Norwich Trunk Road. The A17 (T) and the A47 (T) lead west from King’s Lynn giving access to Peterborough and the A1 whilst the A10 (T) leads south of King’s Lynn gives access to Cambridge (see Figure NTS 1).

3.2 The village of Leziate is situated to the north and west of the Site with the villages of Middleton and East Winch located to the west and to the east, respectively. Leziate comprises primarily ribbon development along the local road network, whilst Middleton and East Winch comprise more compact rural settlements. There are also a number of outlying rural properties associated with each settlement.

3.6 The proposed extension site is identified within the Norfolk Minerals Local Plan as an Allocated Site.

3.7 The general land use of the area is predominantly medium scale arable on the valley slopes with scattered woodlands, copses and hedgerows. The proposed extension area itself is in general arable use, but with some areas recently used for raspberry canes and some land at times in set-aside.

3.8 Mineral working, both past and present has significantly influenced the quality, form and shape of the local landscape notably around Leziate, Wicken and Bawsey. Most of the workings have been restored to recreational and nature conservation uses including a Country Park, Nature Reserves and a Country Club.

3.9 Bridleway East Winch No 1 and Footpath East Winch No 2 cross the proposed extension area and as such it is proposed to divert these routes to enable the development. A section of Bridleway East Winch No 1 is diverted around the current quarry workings.

3.10 A water main runs alongside the A47 and on the western boundary of East Winch village.

3.11 An 11Kv overhead power line crosses the centre of the proposed extension area from east to west. A spur also runs north to south on the west side of a track serving Grandcourt Farm. An overhead telephone line runs north to south on the east side of a track, also serving Grandcourt Farm. It will be necessary to seek the diversion of these services to enable mineral extraction in the extension area. Statutory undertakers will be consulted as part of the planning application process.
The Proposed Development in Brief

3.12 The planning application boundary for the proposed extension to Grandcourt Quarry is shown edged in red on Figure NTS 2. The planning application boundary for the re-phasing of the existing quarry is shown edged in red on Figure NTS 3. Adjacent land in which the Applicant has an interest, but over which no development is proposed as part of this Application, is shown in blue on Figure NTS 2. The proposed mineral extraction area covers 22 hectares and is shown on Figure NTS 4. Areas not required for extraction are proposed to be used for temporary overburden storage/screening mounds, landscape planting and rights of way diversions.

3.13 Access to the site would use an extension to the internal haul route which connects the quarry with the existing processing plant at the Plant Site.

3.14 The extension Application area covers 37.2 hectares. The proposed mineral extraction area covers 22 hectares.

3.15 Figure NTS 4 outlines the proposed extraction operation phases which would be linked to the existing Plant by the existing internal haul route. The restoration plan for the proposed extension site, the details of which are shown on Figure NTS 5, will be delivered progressively and the new landform would be completed within two years of the final phase of extraction in the extension area. No material will be imported to site to achieve the final restoration. The overall restoration plan for the extension and the current quarry area is shown on Figure NTS 6.

3.16 Subject to planning consent, site development is planned to commence in 2018. Reinstatement of worked out areas will be progressive following on from the phased mineral extraction. The final phases of mineral extraction will be carried out by late 2020, with a further 2 years required for the overall implementation of the final landform restoration scheme. Following completion of mineral extraction in the extension area, quarrying would continue in the current quarry until end 2025.

The Existing Plant Site

3.17 The Plant Site is located c.2.5 km south east of the centre of King’s Lynn, c. 2.5 km north west of the centre of East Winch, and c. 2.1 km to the north of Middleton. The Plant Site lies within Leziate Parish to the north of Middleton Parish.

3.18 The Plant Site occupies an area of 33.4 hectares and is located in semi-rural area characterised by large areas of agriculture, areas of woodland and lakes to the north, north-west and the east created by past mineral extraction.

3.19 Fronting the south of the Plant Site (to the south) is the former Lynn to Dereham railway line which closed in 1968 to passengers. The section between King’s Lynn and the
Plant Site (Middleton Towers sand terminal) remains open to freight and is utilised by Sibelco for exporting sand from the Plant Site.

3.20 Holt House Quarry is located c. 90 m to the east and Grandcourt Quarry c. 1 km to the south east. A private off-highway haul road connects the Plant Site to both Holt House Quarry and Grandcourt Quarry.

3.21 The Plant Site undertakes the importation, stockpiling, processing and storage of material and has done so for over 50 years (Certificate of Lawful Existing Use or Development ref: C/2/2017/2012, 21st March 2018).

3.22 The primary activities associated with the Plant Site are:

- sand importation and stockpiling
- importation of materials
- sand processing by washing, sizing, cold acid attrition, acid leaching, high intensity magnetic separation and drying;
- storage of product grades;
- HGV loading and despatch
- rail loading and despatch;
- maintenance; and
- water management

3.23 The Plant Site currently processes around 850,000 tonnes of sand per annum of which around 70% is dispatched by rail. The balance is transported from the Plant Site by road via Station Road / Hill Road and the A47.

3.24 There are no proposed changes to the existing operations at the Plant Site.
4. ENVIRONMENTAL EFFECTS

3.1 Overview

4.1.1 This Section provides a non-technical summary of each of the topics assessed in the EIA broadly in the order in which they appear in the ES.

4.1.2 The principles underlying the Application seek to ensure that the need for the sand that would be met by the Proposed Development is integrated with the need to ensure the protection and enhancement of the local environment.

4.1.3 In this way, the Applicant has sought to ensure that the Applications provide both for the improved processing and production of industrial sands and that it is fully sustainable, leading to an environment that in the long term, is at least as rich as that which exists at present and which will enhance the long term environmental amenities of the area.

4.2 Alternatives

The Proposed Development

4.2.1 In the case of minerals extraction the consideration of alternatives to the development itself is difficult and reasonable alternatives are limited. Essentially mineral deposits can only be worked where they are found in geologically and economically viable quantities.

4.2.2 In this case a number of alternatives were considered. These included:

- Do Nothing - retention of the status quo which would result in the cessation of production of silica sand at King’s Lynn Quarry upon the expiry of the present permissions or exhaustion of current consented reserves;
- Alternatives to the continued silica/industrial sand supply; and
- Alternative extension locations

4.2.3 The ‘do nothing’ scenario assumes that no further extensions to the site are proposed and that production ceases when the existing reserves are exhausted. This option would fail to deliver the continued supply of silica/industrial sand to the consuming industries, contrary to policies that seek the maintenance of such supplies at the best balance of social, environmental and economic cost within the development plan and at a national level. This was not therefore, considered a realistic alternative.

4.2.4 In the case of mineral working the opportunity to identify substitutes or alternative sites is limited by the incidence and location of the geology that can produce the right materials. There is no real substitute for silica sand (recycling does contribute to supply but new silica sand is required for technical reasons) due to the demanding specification and performance requirements of the end products and to the consistency of the raw materials supplied to the end users.
4.2.5 In the case of silica/industrial sand, it is recognised in national and local development plan policy that the sand is nationally scarce. The Quarry is one of only a very few locations in the UK where silica sand for glass manufacture is found.

4.2.6 Sands vary in quality within this area, with both low iron and higher iron sands and coarser and finer sands being present; the quarry extension application site is known to contain appropriate quality sands suitable for glass manufacture. Hence, in reality, this is the only location within the area that is available and capable of meeting the requirement for continued supply.

4.2.7 Alternative forms of restoration were considered, for example a restoration to a smaller water feature. This was discounted by the due to the need to import material from outside the King’s Lynn quarry site and the potential major impacts associated with such an option.

4.2.8 Alternative methods of working were considered. For example, different phasing options for the proposed extension area were examined. The phasing proposed results from considerations of visual impacts, material handling and temporary storage, access and mineral quality. Different methods of sand transfer from the extension area to King’s Lynn Quarry processing plant were also assessed. In each case the preferred alternative adopted was that which minimises the impact of the development on the environment and amenities.

4.2.9 Detailed alternative landscape planting proposals were considered, involving different woodland structure and combinations, but these approaches were felt to deliver less overall habitat and landscape benefit than the option chosen which is for discrete woodland blocks with scrub planting on the lake banks.

**The Existing Plant Site**

4.2.10 There are a number of potential options that could be considered for the relocation of the plant facility. However, there is nothing to be gained in environmental terms from any such relocation hence the retention of the current plant site and its associated infrastructure involves significantly less environmental disruption than any new development within this area.

4.2.11 There are no changes proposed to the existing development and Sibelco does not therefore consider that there is a reasonable alternative to anything other than the continued use of the Plant Site.

4.3 **Soils**

**Assessment of Proposed Development**

4.3.1 A details soils report is included at Section 5 of the ES.
4.3.2 The extension site is currently largely in agricultural use, mostly arable and the soils have been assessed and found to be ALC Subgrade 3b, the land is therefore not classed as Best and Most Versatile (BMV).

4.3.3 NPPF paragraph 112 states that ‘Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of higher quality’. The proposed extension area does not therefore conflict with this in that the soils are all identified as ALC Subgrade 3b.

4.3.4 The principle of mineral extraction, and therefore soil stripping and storage, within the existing Grandcourt Quarry area has already found to be acceptable and the management and handling of soils will continue to be undertaken in accordance with Defra Good Practise Guidance for Handling Soils (Sheets 1-4) where possible and practicable to meet the requirements of the restoration scheme.

4.3.5 The restoration of the proposed extension area is primarily to water but the wider Grandcourt site (existing quarry and proposed quarry extension) is to be restored to a combination of agricultural land (c. 81 hectares in total) and lakes. Areas set aside for temporary soils storage will also potentially be available for future agricultural use.

4.3.6 A breakdown has been provided of the types of topsoil and subsoil resources currently on-site and recommendations have been made that each type of soil should be stripped and stored as a separate entity. All soils to be stripped and stored on-site will be handled in accordance with recognised best practise and in accordance with the details set out in the proposed restoration scheme.

4.3.7 On this basis it is considered that the Proposed Development will not have a significant effect on soil resource or the quality of the soil resources on-site.

4.3.8 Within the context of the Proposed Development no mitigation measures, in addition to the good practise measures already committed too, are considered necessary.

4.4 Air Quality

Assessment of the Proposed Development

4.4.1 Section 6 of the ES addresses the potential for effects on air quality arising from the operation of the proposed extension to Grandcourt Quarry and the existing quarry area. Dust can be raised during earthmoving operations (soil and overburden removal and replacement and extraction of mineral and transfer from the quarry to the processing plant. Potential effects on nearby residential properties have been assessed. Prevailing winds in the locality are fairly light for much of the time and unlikely to raise dust over the distances involved. Strong winds capable of blowing sand are infrequent and are
usually at times of higher moisture contents (often accompanied by wet conditions) and even if sand was raised it would fall to the ground within short distances.

4.4.2 In order to minimise dust being raised, best practice procedures will be put in place, as per the current quarry, including minimising near surface activities in dry or windy weather; adhering to site speed limits; grading internal roads and using temporary soil mounds and new tree planting blocks to reduce travel distances of any dust raised.

4.4.3 In addition to air-borne fugitive dust, studies of fine particulates present in the general area have been undertaken. Fine particulates will be derived in the main from road traffic on the A47. Fine particulates are monitored by Sibelco and results over the past 4 years shows levels less than half of the National Air Quality Standard and in line with typical rural areas of the country.

4.4.4 Sibelco has a dust monitoring network around the current site and proposed extension site and these will continue to be monitored and reported as part of an agreed monitoring scheme.

4.4.5 The proposed mitigation measures, and their embodiment within a formalised Dust Monitoring Scheme and Dust Action Plan, will ensure that dust emissions from the Proposed Development are adequately controlled such that significant adverse effects are unlikely to be caused at any receptors in the vicinity of the proposed extension.

Assessment of the Continued Use of the Existing Plant Site

4.4.6 Section 17 of the ES considers the potential air quality and dust issues associated with the existing Plant Site. The emphasis of the regulation and control of dust and PM$_{10}$ generation is evident at the Plant Site.

4.4.7 The approach to the mineral dust assessment detailed at Section 17 of the ES is based on a source – pathway – receptor relationship and considers impact on amenity, human health and ecology. The risk of potential impacts identified with good practice measures in place is then used to inform the level of additional dust and PM$_{10}$ mitigation required to ensure that the associated effect is not significant.

4.4.8 Due to the rural nature of the area, dust and PM$_{10}$ sensitive receptors within the zone of potential impacts considered in this assessment (250 metres) are limited to a handful of residential properties. Each of the receptors chosen represents the maximum level of exposure that could be experienced at other receptors in their vicinity.

4.4.9 When frequency of dusty winds is considered (based on local data), along with the receptor distance from the source, the resultant pathway effectiveness is classified as moderately effective for the majority of the receptors identified in the assessment.
However, there is a highly effective pathway in the case of one identified receptor; Holt House properties, which are located to the north east of the Plant Site.

4.4.10 The resulting magnitude for effects of deposited dust is judged to be slight adverse at one receptor and negligible in other areas. On this basis it is concluded that the overall effect of dust deposition at sensitive receptors due to the current use of the Plant Site is not considered to be significant.

4.4.11 DEFRA background maps for the Plant Site indicate that the particulate matter concentration is around 15.3µg/m³. This is less than half of the annual mean air quality objective and provides evidence that the background is consistent with that found in rural areas. Therefore, there is little risk that the Process Contribution made by mineral processing activities at the Plant Site would lead to an exceedance of the annual mean PM₁₀ objective, in accordance with IAQM guidance, and the effect of the current operation of the Plant Site on local concentrations of PM₁₀ is not considered to be significant.

3.4.12 There would be no change in current fugitive dust soiling at the identified receptors, or particulate matter concentrations at the Plant Site as a result of the continued use of the Plant Site. As no further mitigation measures, over and above those measures already adopted at the site, are considered necessary the overall residual effect of dust deposition or particulate matter concentrations due to the current and continued use of the Plant Site is not considered to be significant.

4.5 Noise

Assessment of the Proposed Development

4.5.1 A detailed noise assessment has been undertaken (see Section 7 of the ES) in relation to the Proposed Development at Grandcourt Quarry.

4.5.2 The proposed extension of quarry operations on land to the east of Grandcourt Quarry will involve mobile plant working in closer proximity to a number of residential properties. Calculated received noise levels as a result of mineral extraction in the proposed extension area have been compared to the average of the daytime L₉₀ values measured at each identified receptor and in all cases are predicted to be within both the 55dB(A) LEQ limit and no more than ten decibels above the existing average daytime background noise levels. For the short-term activities including soil stripping and construction and removal of screening mounds, received noise levels will be higher but are predicted to remain well below the 70dB(A) LEQ noise limit defined for these short term site preparation operations.

4.5.3 Mitigation for noise has been designed into the proposed scheme in terms of operating hours, limited operation on near surface activities (soil removal etc.) and the
construction of temporary soil mounds around the quarry extension area.

4.5.4 A comparison of measured background noise levels and predicted worst-case noise levels arising from the Proposed Development indicates that the impact will be within national planning guidance standards. Planning conditions and working hours will regulate operations and operating hours.

Assessment of Continued Use of Existing Plant Site

4.5.5 A detailed noise assessment has been undertaken (see Section 18 of the ES) in relation to the continued use of the existing Plant Site. To assess the potential impact of the continued use of the exiting Plant Site, baseline noise levels have been measured at the closest receptor locations to the site. Baseline noise levels have been compared with modelled worst case noise levels as a result of the operation of the processing plant. Noise modelling predictions have also been calibrated against further measurements made at locations close to the site boundary.

4.5.6 The operational noise sources on-site as a result of the operation of the processing plant have been modelled based on measurements taken on-site to predict the operational sound emissions at a number of identified sensitive receptors in the vicinity of the Plant Site. The modelling undertaken considers a typical operating scenario for daytime, evening and night time.

4.5.7 Given the small number of complaints received by the facility from local residents and the subsequent mitigating actions undertaken by the Plant Site operators, it is considered that residents are not routinely disturbed by noise from the site.

4.5.8 Sibelco operate the Plant Site in accordance with best practice measures in order to reduce the risk of disturbance to sensitive receptors as a result of noise from the site, the measures adopted by Sibelco are set out in Section 18 of the ES and are taken into account in the context of the assessment.

4.5.9 While the assessment of rating levels against background levels as per guidance from BS 4142:2014 indicates effects of potential moderate significance during evening and night periods at some receptor locations, based on a comparison of the predicted sound levels from the Plant Site, the observed noise environment in the vicinity of the Plant Site, and the existing measured background sound levels at the residential receptors, (together with consideration of the contextual factors of the existing noise environment and history of site operations) it is concluded that the impact of the continued operation of the Plant Site in its current form on surrounding residential receptors would overall be limited to an effect of minor significance i.e. not significant.
4.5.10 As the significance of the effect of the operational sound emissions is predicted to be limited to minor (i.e. not significant) at the residential receptors, no further measures are required to mitigate these effects.

4.6 Landscape and Visual

Assessment of the Proposed Development

4.6.1 A detailed Landscape and Visual Impact Assessment (LVIA) has been undertaken in relation to the Proposed Development at Grandcourt Quarry (see Section 8 of the ES).

4.6.2 The Extension Site lies within the ‘North West Norfolk’ National Character Area (NCA) (Natural England, 2012) and the development has been assessed for landscape and visual impact in accordance with best practice guidance. The site lies on a north facing undulating ridge slope which runs down to the Middleton Stop Drain. The general area to the north is characterized by large areas of mixed woodland associated with former mineral workings although on the valley slope the landscape becomes more open with individual game plantations. The impact of heavy traffic along the A47 creates a poor quality environment along the southern edge of the site.

4.6.3 Local topographical undulations limit views from the settlements of Middleton and Tower End. The site is in proximity to the western part of East Winch and the scheme has been designed to minimise visual impact in this area. While views from the north are limited in number and distance, the site’s sloping elevated aspect leaves part of the site’s north and middle section visible from a few viewpoints. There are a number of close views from properties along the eastern boundary to the site and public rights of way which cross the site.

4.6.4 The development proposals will result in change to the local topography and loss of some hedgerow and hedgerow trees. The restoration proposals will result in more hedgerow planting with hedgerow trees and effects will reduce significantly as the site is progressively restored. Post restoration, the proposals will introduce some different elements into the valley side landscape, such as steeper contours and water areas.

4.6.5 A number of mitigation options have been included for reducing the overall significance of effects. These include:

- provision of temporary contoured screen bunds along the northern, eastern and southern margins;
- diversion of a Footpath and a Bridleway which currently cross the site; and
- restoration of the site to a lake with hedgerows and hedgerow trees, linked to the existing landscape infrastructure and with temporary and permanent future routes for Rights of Way.
4.6.6 The areas of the various components within the restoration of the extension area are as follows:

- Woodland/scrub c. 8 hectares
- Conservation grassland c. 4 hectares
- Wetland (including lake area) c. 16 hectares
- Hedgerows c. 2,600 metres (new and retained)
- Agriculture c. 5 hectares

4.6.7 The most significant visual effects of the Proposed Development are limited to relatively few locations, principally public rights of way and properties which are in proximity to the site. These will be partly mitigated by the provision of woodland planting blocks and temporary contoured screen bunds, with the effects being reduced as the site is progressively restored. There will be no changes, other than one of timing, to the existing Grandcourt Quarry.

Assessment of the Continued Use of Existing Plant Site

4.6.8 A detailed LVIA has been undertaken in relation to the continued use of the existing Plant Site (see Section 19 of the ES).

4.6.9 Landscape and visual effects resulting from the Plant Site may be summarised as:

- the Plant Site exists within the baseline and therefore there will be no new, or different, direct or indirect effects on landscape character arising from its continued use;
- the highest point of the processing plant is visible from some locations within the Study Area and therefore there will be no new or different effects on visual amenity arising from its continued use.

4.6.10 The LVIA included at Section 19 of the ES is therefore focussed on assessing the extent that the existing Plant Site influenced landscape character and visual amenity as experienced at the time of the Site visit and, where appropriate, at other seasons.

4.6.11 The Plant Site is assessed as being of overall very low landscape value due to poor landscape condition, low scenic quality and absence of conservation interest and recreational value. It has a long history of mineral processing which is the dominant use at the Site scale.

4.6.12 The Study Area is assessed as a medium value landscape due to landscape condition, scenic quality, representativeness and conservation interest, although there is a relatively high level of recreational value.

4.6.13 Direct / Indirect effects on the character of LCA G1: Bawsey and Leziate within the
Study Area, are currently of negligible significance and would remain so during its retention. Effects on the wider character of LCAs in the Study Area are, and would be, of negligible significance. It is assessed that there will be no significant changes in landscape character at Site, LCA, or Study Area level.

4.6.14 The Study Area of the assessment has been defined in part by the ZTV of the Plant Site (see Figure 19.1 appended to Section 19 of the ES). The ZTV was established by initial analysis of topographic maps, 3D digital modelling and terrain analysis and is based on the theoretical visibility of the existing landform and plant within the Site.

4.6.15 The ZTV indicates that beyond the extent of the 3 km Study Area the Plant Site would be unlikely to give rise to significant landscape or visual effects, although the Study area has been extended to the north to incorporate any potential views from the Norfolk Coast AONB.

4.6.16 The continued use of the Plant Site would not entail any significant removal of landscape elements or changes in visual amenity / views. Consequently, the proposed development, when compared to the baseline situation, constitutes a no change scenario from the majority of the viewpoints identified.

4.6.17 Effects on views/ visual amenity at viewpoint 3 are localised to the Site entrance and are of minor significance. Effects on views at viewpoint 5 (representative of views from residential receptors at Lynn Road/ A47), are of negligible significance. Overall, the continued use of the Plant Site would have less than negligible / neutral effects from other viewpoints in the wider landscape of the Study Area.

4.6.18 Due to the nature of the subject of the assessment, an existing development within the baseline with proposed continued usage and no change, and the extensive nature of existing screening vegetation, it is assessed that landscape mitigation is not required and would not be effective. Therefore no landscape mitigation is proposed.

4.6.19 The assessment concludes that there are no significant landscape, or visual, effects of the continued use of the Plant Site that would result in unacceptable changes in landscape character or visual amenity.

4.7 Cultural Heritage

Assessment of the Proposed Development

4.7.1 Section 9 of the ES comprises a report that has been prepared which draws together the findings of a cultural heritage desk-based and field-based assessment of the proposed extension area. Cultural heritage is represented by a wide range of features that result from past human use of the landscape.
The report considers both direct and indirect effects upon cultural heritage. Indirect effects can occur as a result of significant changes to the setting of an historic landscape or feature, whether permanent or temporary. The Study Area covers a parcel of land, comprising the proposed mineral extraction area and temporary soil storage areas.

No designated features of cultural heritage importance or listed buildings lie within the application site. All Saints Grade II* church is located to the south-east of the site boundary, on the opposite side of the A47 Trunk Road.

A search was made of the Norfolk Historic Environment Record (NHER) for sites and finds-spots within a radius of 1.5km from the application site. The main archaeological evidence within the application site is that of cropmarks (NHER 50836) which represent field boundaries, trackways and enclosures.

A detailed magnetometer survey of 53 hectares was undertaken in November and December 2011 with a second phase in May 2012. This work revealed a complex sequence of anomalies interpreted as linear boundaries, enclosures, trackways and other features.

An archaeological evaluation by trial trenching was conducted in February and March 2012. Based on results obtained from the desk-based assessment and the geophysical survey, 84 trial trenches were excavated which targeted areas of known archaeological remains and geophysical features along with areas of unknown archaeological potential.

The proximity of the site to the north-west of All Saints’ Church in East Winch offers the opportunity to study settlement pattern close to a medieval church and an ancient roadway (now known as the A47). Pottery evidence in the form of Ipswich ware (AD 650-850) may suggest that Saxon settlement within this part of East Winch probably began in the 7th-9th centuries. The medieval focus for East Winch was likely to have been concentrated around the church; the present day settlement mainly lies to the east and may suggest that settlement shift possible occurred during the later medieval to post-medieval periods.

Within the proposed extension site, the main foci of archaeological features and deposits have been identified by the field-based evaluation. However, given the number of archaeological features found within the evaluation trenches it can be anticipated that further, unexpected discoveries will be made during the development. Before any permitted development commences, a formal and final Written Scheme of Investigation would be submitted to Norfolk CC for approval, and this may be revised (subject to written approval) as the project progresses. Work would be carried out by a competent contractor and implemented by way of a planning condition.
4.7.9 Section 20 of the ES considers the effects on the historic environment resulting from the continued use of the existing Plant Site. As there will be no new land take, below-ground archaeology was scoped out of the assessment.

4.7.10 The Plant Site has already been established and has been operating for well over 50 years. The site, therefore, forms part of the existing baseline. There will be no change to the physical form of the Plant Site as part of the development proposals for the neighbouring Grandcourt Quarry. The following assessment establishes what the existing effects of the working Plant Site are and determines what the impact of this continued operation will have on the significance of the heritage assets.

4.7.11 Operational effects result from the operation of the site and can result from elements such as lighting and noise.

4.7.12 The moated site and manorial earthworks at Middleton Towers (NHLE 1018647) and Middleton Tower (NHLE 1077649) are located to the north-east of the Tower End settlement, approximately 300 metres to the south of the Plant Site. As a result of the operations at the Plant Site, the assets currently experience noise and lighting. The same levels of noise and light are expected to continue as a result of the continuing operation of the Plant Site; therefore the magnitude of impact from the continued use of the Plant Site will be minimal on assets of high significance resulting in a minor adverse effect.

4.7.13 The Stables at c 120 metres west of Middleton Tower (NHLE 1342407) is located approximately 550 metres to the south-west of the Plant Site, just west of the Middleton Tower. Due to its location, the existing Plant Site is discernible within its setting; however, it is not considered to detract from the understanding of its significance. It is expected that the same levels of noise, lighting and traffic will continue to be experienced from the asset as a result of the continuing operation of the Plant Site. There will, therefore, be no impact to the significance of the assets above and beyond that already experienced as a result of the continuing operation of the Plant Site.

4.7.14 The rest of the listed buildings within the hamlet of Tower End do not experience any effect on their significance from the existing Plant Site due to the distance from the site and intervening screening. It is expected that the same levels of noise, lighting and traffic will continue to be experienced from the asset as a result of the continuing operation of the Plant Site. There will, therefore, be no impact as a result of the continuing operation of the Plant Site.

4.7.15 Outside the hamlet of Tower End, approximately 1 km to the west of the Plant Site, there is a Grade II listed font (NHLE 1077666) that has been incorporated the south façade of the Whitehouse Farmhouse. The font has been taken out of its original
context; therefore it current setting does not contribute to its significance. The interest of
the structure is in its physical form and this is not affected by the Plant Site. There will
be no impact from the continued operation of the Plant Site.

4.7.16 Given the limited effect of the continued use of the Plant Site on the historic
environment, no further mitigation or monitoring measures are proposed.

4.8 Ecology

Assessment of the Proposed Development

4.8.1 An Ecological Impact Assessment has been undertaken to assess the likely impacts on
habitats and species of the Proposed Development, both in the extension area and in
the current Grandcourt Quarry. Updates have been undertaken with regards to site
survey work in order to ensure that the findings of the original assessment work remain
valid and up-to-date (see Section 10 of the ES).

4.8.2 No plants protected under the Wildlife and Countryside Act 1981, no Red Data Book
plants and no nationally scarce plants have been found within the survey areas.

4.8.3 There are no waterbodies within the application area and those closest did not hold
great crested newt with the exception of one pond.

4.8.4 Based on the 2018 eDNA results great crested newt presence has been confirmed in
Pond C which is located c.272 metres to the north of the proposed quarrying activities.
The pond is will not be affected by the proposed quarry work and there is very limited
suitable terrestrial habitat surrounding the pond suitable for great crested newt other
than that immediately surrounding the pond (i.e. bank vegetation, scrub and hedgerow
within 20 metres). The pond is then surrounded by intensively managed arable fields of
poor suitability for great crested newt.

4.8.5 Based on the distance of the development from the pond, the scale of the proposed
quarrying activities and the lack of suitable terrestrial habitats present the development
is highly unlikely to result in an offence to great crested newt. Given the negligible risk
of encountering great crested newt, mitigation can be adequately addressed through a
non-licenced method statement within an Ecological Management Plan. This mitigation
approach would not change even if population size class data was collected.

4.8.6 The 2018 survey work identified an area of tall herb/scattered scrub vegetation within
the proposed quarry extension area and that has suitability for reptiles. It should be
noted that as this habitat will not be lost in the immediate short-term, mitigation would
be best based on further field data obtained at the relevant time. Therefore any survey
and subsequent translocation (if required) should be undertaken just prior to quarry
works that would affect this habitat.
4.8.7 No bat roosts were found.

4.8.8 There will be no additional effect on Conduit Plantation (which is located to the north-west of the existing Grandcourt quarry) or the spring flow associated with it as a result of this application. East Winch Common is situated around 750 metres to the south-east of East Winch on the opposite side of the A47. It is not considered that there will be any direct or indirect effects arising from noise, dust, or hydrology.

4.8.9 The restoration of the site (shown on Figure NTS 6) has taken into account the requirement to mitigate against the effects of any impacts as far as possible, to compensate for those that cannot be adequately mitigated against and to enhance the value of the restoration for wildlife. An estimated 1,550 metres of hedges will be removed from within the extension area. Of these, one hedge is considered to be classed as ‘Important’ under the Hedgerows Regulations. There will be a replanting of 2,100 metres of hedgelines including standards typical of those currently present to add to the 2,000 metres to be planted at the adjacent Grandcourt Quarry site.

4.8.10 The restoration takes into account the UK and Norfolk Biodiversity Action Plan objectives and the potential to attract rare or declining species whether or not they are included in these plans. Appropriate conditions will be created for skylark, grey partridge, reed bunting and brown hare. The proposed restoration is primarily to water since the excavation will be several metres below the natural groundwater level in order to release the proven mineral. It will not be possible to deliver a dry restoration using on-site overburden materials.

Assessment of the Continued Use of Existing Plant Site

4.8.11 An Ecological Impact Assessment has been undertaken to identify the potential for any likely significant effects on ecology and nature conservation as a result of the continued use of the existing Plant Site (see Section 21 of the ES).

4.8.12 The aims of the EcIA for the continued use of the Plant Site are to:

- identify relevant ecological features (e.g. designated sites, habitats, species or ecosystems) which may be affected;
- provide a scientifically rigorous and transparent assessment of the likely ecological impacts and resultant effects of the continued use of the Plant Site. Impacts and effects may be beneficial (i.e. positive) or adverse (i.e. negative);
- facilitate rigorous and transparent determination of the ecology and nature conservation consequences of the continued use of the Plant Site, where the level of detail provided is proportionate to the scale of the use and the complexity of its potential impacts; and
set out what steps would be taken to adhere to legal requirements relating to the relevant ecological features concerned.

4.8.13 There is nothing inherent in the requirements for the ongoing operation of the Plant Site that would have potential to result in adverse impacts on the identified nature conservation designations. The Plant Site is part of the established baseline conditions. Nature conservation designations are not a constraint to the ongoing operation of the Plant Site.

4.8.14 The closest statutory designation, Bawsey SSSI, is located 0.9 km to the north and is protected for its geological interest. All other statutory designations are more than 3 km away.

4.8.15 There are several non-statutory nature conservation designations near the Plant Site, but the interest features of these mean that there are no grounds to expect adverse impacts from the ongoing operation of the Plant Site. The Plant Site is surrounded by mature woodland screening that serves to buffer adjacent land. All of the relevant designations have established on, or in proximity to, land subject to previous phases of mineral working and therefore quarrying locally has been compatible with nature conservation objectives.

4.8.16 The survey of the Plant Site identified no habitats of specific nature conservation interest with potential to be adversely impacted by the ongoing operation of the site. Therefore there are no relevant habitat constraints associated with the Plant Site.

4.8.17 There are no specific species constraints to the ongoing operation of the Plant Site. Protected and notable species, where present in association with the site and adjacent land, have established in the context of an existing operational site. No change from the established baseline conditions are proposed that would alter this established context, and no adverse impacts on species would be expected from the ongoing operation of the site.

4.8.18 The Plant Site will need to continue to operate in a manner consistent with the legal protection afforded to nesting birds. Existing established procedures may merit review, but there are no grounds to expect that legal compliance cannot be delivered. Similarly ongoing care will be needed to prevent the establishment and spread of controlled weeds within the site, particularly rhododendron which occurs nearby.

4.9 Hydrology and Hydrogeological Risk Assessment

Assessment of the Proposed Development

4.9.1 The hydrological and hydrogeological impact assessment carried out included a review of available baseline data, formation of a conceptual hydrogeological model of the site,
assessment of potential effects of quarrying on groundwater and surface waters, and
identification of appropriate mitigating measures. The impact assessment takes into
account the potential combined impacts from the existing quarry and the proposed
extension.

4.9.2 The principal potential effects of quarrying and proposed mitigation measures identified
by the hydrological and hydrogeological impact assessment are:

• it is not anticipated that there will be any significant drawdown at the Middleton
  Stop Drain due to the ameliorating effect of the newly restored Wicken South
  Quarry;
• the predicted distance of influence of dewatering ranges from c.140 metres to
  570 metres;
• using a worst case scenario (e.g. same permeability as for the eastern side) the
  potential drawdown at the Conduit Plantation, approximately 630 metres from the
  current quarry, is likely to be of the order of 0.7 metre, which is the magnitude of
  seasonal variations observed in groundwater levels;
• surface water abstractions may be impacted by low flows in field drains, but these
  can be maintained by quarry water discharges if necessary and it is unlikely that
  the proposed quarry extension will have any additional impact compared to the
  extant planning consent;
• the drawdown at the edge of the quarry is predicted to be approximately
  15 metres, reducing to less than 2 metres within 220 metres of the edge of the
  quarry.

4.9.3 It is proposed that the monitoring and mitigation of potential impacts to surface water
and groundwater are managed by means of a Water Management Plan, which shall be
drawn up in consultation with the appropriate regulatory authorities – the proposed
content of which is included as Appendix 5 to the Planning Statement. The plan will
specify:

• the location, frequency and required parameters for groundwater and surface
  water monitoring;
• quarry water discharge locations and monitoring requirements;
• requirements and methods for mitigation;
• where appropriate, the methods employed to identify derogation and trigger
  mitigation procedures;
• compliance criteria for mitigation methods;
• reporting periods and review requirements.
4.10 Flood Risk

Assessment of the Proposed Development

4.10.1 A Flood Risk Assessment (FRA) has been undertaken that considers the risk of flooding to the Proposed Development, the potential for the Proposed Development to increase the risk of flooding elsewhere and the potential impacts of climate change to both on-site and off-site flood risk (see Section 12 of this ES).

4.10.2 The EA river (fluvial) and coastal flood map illustrates that the site lies within Flood Zone 1. Sites in Flood Zone 1 have a low probability of flooding i.e. less than 1 in 1,000 annual probability of river or sea flooding (<0.1%). There are no areas designated as Flood Zone 2 or Flood Zone 3 within 250 metres of the site, flooding of the site is therefore extremely unlikely from fluvial sources.

4.10.3 The FRA concludes that the Proposed Development may increase run-off during the quarry operational phase but the quarry void will have adequate capacity to store runoff from the design storm event. Future climate change has been accounted for in run-off calculations with a conservative increase of +40% applied to the rainfall for the restoration phase. Off-site discharge will be controlled by pumping during the operational phase. Once restored, the two proposed lakes, which will be in continuity with groundwater, will provide significant run-off attenuation above the greenfield condition leading to a net reduction in run-off leaving the site. With water management measures are put in place, the development will not increase the flood risk off site.

Assessment of the Continued Use of Existing Plant Site

4.10.4 A Flood Risk Assessment (FRA) has been undertaken that considers the current risk of flooding to the Plant Site from all sources and provides a summary of the potential impacts of climate change as a result of the continued use of the Plant Site (see Section 22 of the ES).

4.10.5 The EA Flood Map for Planning indicates that the Plant Site is located entirely within Flood Zone 1 (i.e. low probability of fluvial and tidal flooding). Sites in Flood Zone 1 will only flood in events greater than a 1 in 1000 year return period storm (which has a <0.1% Annual Exceedance Probability).

4.10.6 As there are no planned works at the Plant Site the assessment undertaken considers the current flood risk at the Plant Site and provides a summary of the potential impacts of climate change over the assumed lifetime of the Plant Site (assumed lifetime is for the purposes of this assessment only).

4.10.7 The following conclusions have been reached regarding flood risk:

- the entire Plant Site is located in Flood Zone 1 and is classed as being at low risk
of flooding from fluvial and tidal sources;

- the Plant Site is classed as ‘Less Vulnerable’ infrastructure (minerals working and processing) and is therefore appropriate development in Flood Zone 1;

- the EA RoFSW map shows the majority of the Site is located in an area at very low risk of flooding from surface water. There are small localised locations of potential high surface water flooding (as identified by the RoFSW map) associated with ponding against the existing Plant Site infrastructure. The overall risk of surface water flooding at the Site is considered to be low;

- the EA Flood Risk from Reservoirs map shows that the Site is not located in an area at residual risk of flooding from a large reservoir in the event of a structural failure or breach. There are no other artificial waterbodies, including canals, in close proximity to the Site;

- the risk of flooding from drainage infrastructure and groundwater is considered to be low;

- the existing Plant Site surface water drainage system site provides the appropriate level of surface water management and pollutant control;

- the impact of climate change over the (assumed for the purposes of this assessment) lifetime of the Plant Site will not increase significantly from the current scenario. Flood risk from all sources will remain low;

- there is a potential residual risk of failure of the surface water drainage system, pump failure or exceedance of the system’s design capacity. However, regular maintenance and inspection of the drainage system should be undertaken to ensure that the system continues to perform as designed; and

- there are no off-site impacts as a result of the continued use of the existing Plant Site in relation to flood risk.

4.10.8 The Plant Site is therefore consistent with the requirements of the NPPF. The flood risk for the Plant Site is assessed as low and it is considered that the Plant Site will remain safe over the assessed lifetime of the processing plant.

4.11 Transport

4.11.1 Since the majority of mineral leaves the Leziate plant site on rail, the Transport Statement included at Section 13 of the ES deals primarily with HGV access to and from the Plant Site and access by staff (in cars) and other essential deliveries. All sand leaving the quarry area is transferred to the Plant Site on internal haul roads with no impact on public highways.

4.11.2 The Transport Statement identifies the current generation of the site; current and proposed network conditions and impact analysis on the access routes. Background flows have been determined from data supplied by the local authority. Sibelco has
provided details of operational traffic for the existing and Proposed Development for both staff and HGVs based on current operation and the capacity of the process.

4.11.3 The impact of the Proposed Development was assessed in traffic and transportation terms. The following conclusions have been reached:

- existing network conditions on the A47 (T) in the vicinity of the Proposed Development do not display capacity problems;
- other roads used to access the Plant Site have a very low base flow;
- the Plant Site benefits from a rail connection;
- rail is used to transport 70% of the quarry production. Further use of rail is dependent on a successful rail freight facilities grant application.
- current levels of generation are minimal and the contribution that development flows make to total flow is low.
- the Proposed Development will not result in any additional HGV movements over and above current levels of generation.

4.11.4 Taking account of the analysis results it was not considered necessary to carry out junction/testing modelling at any point on the network particularly in view of the fact that the development does not generate additional traffic.

4.11.5 The Proposed Development will result in a section of Bridleway East Winch No.1 and Footpath East Winch No.2 to be stopped up. To understand how frequently the footpath and bridleway are used by pedestrians, a pedestrian survey was undertaken over 4 consecutive days in February 2016 and March 2016 coinciding with the Easter weekend. The results of the survey show that Bridleway East Winch No.1 and Footpath East Winch No.2 are currently lightly used. However as part of the proposals, Sibelco intend to submit applications for the temporary and then permanent diversions of Bridleway East Winch No.1 and Footpath East Winch No.2. The proposed temporary and permanent diversion routes are shown on Figure 28.1 of the ES.

4.11.6 It has been concluded that the impact of the proposed development on highways is negligible and will not result in capacity or safety problems on the existing highway network.

4.12 Arboriculture

Assessment of the Proposed Development

4.12.1 The report included at Section 14 of the ES contains the findings of a visual level 2 ground based survey of all trees located within the planning application area of the proposed Grandcourt Quarry extension.

4.12.2 Every tree within the proposed extension area was surveyed and provided with a unique
individual tree tag number and highlighted with pink paint. They were then mapped and a six figure coordinate plotted to detail their location. The tree was then assessed for species, height, crown spread, diameter at breast height (DBH), root protection area (RPA), the condition of the tree and any recommended remedial works. It was also noted in the comments box if the tree fell within the proposed extraction limit and as such would be removed due to the development, if approved.

4.12.3 The majority of trees within the survey are of good health due to the young age of the tree stock. The only works of note are the felling of an Oak on the northern perimeter (tree tag No. 3579) and an elm in the central hedgerow (tree tag No. 3569). The other remedial works included the severing of Ivy, removal of crown deadwood and the removal of damaged limbs.

4.12.4 Management recommendations have been compiled for the conditions observed at the time of the survey; the recommendations are intended to reduce the risk to the public from the defects noted.

Assessment of Continued Use of Existing Plant Site

4.12.5 A Tree Survey was carried out to include trees in the vicinity of the pre-existing operational areas at the Plant Site (see Section 23 of the ES).

4.12.6 Prior consultation was undertaken with Norfolk County Council (NCC) and it was agreed that a full tree survey of the whole Plant Site to BS5837:2012 Trees in relation to design, demolition and construction – Recommendations; would not be proportionate in this instance as there are no proposed changes to the extent of operations within the Plant Site. As such, the assessment of the Plant Site provides an overview of the tree population (to BS5837:2012 where appropriate), with focus on areas where there is the potential for conflict between existing trees and the continued use of the Plant Site. A copy of the scope agreed with NCC is included at Appendix 23.3 to the ES.

4.12.7 The survey area contains sixty-five recorded tree features. These trees and those within the operational area of the Site include a high percentage of native species and those of good biodiversity value.

4.12.8 In general the trees on Site are in fair condition. Most of the trees are from semi mature to mature in age. Some trees have been subject to increased ground levels due to the incidental deposition of silica sand. Trees located in close proximity to unmade access tracks have canopy dieback which may be attributable to compaction of the soil within their RPAs. Soil levels are recommended to be carefully restored around trees to be retained and exclusion zones established to prevent migration of material or operational access into any RPA.

4.12.9 The report included at Section 23 of the ES recommends a number of specific mitigation
measures in relation to specific groups of trees at the Plant Site. Proactive tree management on Site could be improved, including undertaking tree safety works, thinning dense tree groups to promote trees of better form and to improve biodiversity value. Invasive species should be removed and treated to prevent further spread and suppression of more beneficial species. General awareness of trees on Site could be usefully improved via tool box talks and site posters to ensure all site staff and managers appreciate the constraints associated with trees.

4.13 Lighting

Assessment of the Continued Use of Existing Plant Site

4.13.1 The assessment included at Section 24 of the ES considers the potential for likely significant effects as a result of the current lighting arrangements at the existing Plant Site, specifically with regard to light spill, sky glow and glare. The extent of the Study Area for the lighting assessment includes the existing Plant Site and the surrounding areas adjacent and in close proximity. The analysis includes key sensitive receptors that would be most likely to experience existing lighting conditions or views of the night time scene.

4.13.2 Located on the edge of Leziate, the Plant Site is considered to be within a predominantly rural area, where roads are lit to residential standards and having a relatively low population density. This is consistent with a lighting environmental zone E2, though it is acknowledged that higher light levels will be operating within the confines of the Site.

4.13.3 The majority of lighting within the Site is associated with plant operations and building perimeter lighting and therefore consists of column mounted floodlights and building mounted bulkheads. Vehicle access and car parks are lit by streetlight style luminaires on 4.5 – 7 metre columns.

4.13.4 Surrounding residential properties that will be vulnerable to effects of obtrusive light or to a change in lighting conditions at the Plant Site have been identified.

4.13.5 A 3D model of the Plant Site was prepared based on the following information provided by Sibelco:

- Plant Site Building & Structural Heights layout;
- Plant Site layout with lighting position points indicated; and
- Plant Site Lighting Location spreadsheet.

4.13.6 Specific lighting units that were adopted in the model were based on basic light type information provided through an appraised site lighting audit undertaken by Sibelco.
4.13.7 Three components of artificial light in open spaces can contribute to the potential for obtrusive lighting effects (light spill, sky glow and glare) and though these are typically assessed in response to a new or changed lighting condition, calculated findings can also be benchmarked against guidance recommended levels as appropriate for the environmental zone.

4.13.8 Whilst the assessment undertaken of the existing lighting at the Plant Site in terms of Light Spill, Sky Glow and Glare does identify some exceedances against the criteria for environmental zone E2, it is important to note that the Plant Site has been in-situ and in operation for over 50 years and therefore forms part of the baseline context alongside the receptors identified. It is therefore considered that the identified receptors will have either adapted to the prevailing lighting conditions in the area or have established themselves within the area in the context of the existing lighting conditions.

4.12.9 As the Plant Site forms part of the baseline then the criteria for environmental zone E2 may be too prescriptive – the Plant Site is not a new development being introduced into a rural location, rather it is an existing industrial operation within a predominantly rural setting, albeit with a significant historical and present minerals working context.

4.13.10 The ILP Significance Criteria (see Section 24 of the ES) describes an effect of Negligible Significance where

’No increase or decrease in visibility of the site and the level of light spill and glare onto surrounding areas and illuminance levels at the windows of residential properties, thereby would cause no discernible effect to current baseline conditions’.

4.13.11 On the basis that there will be no increase or decrease in the visibility of the site and the level of light spill and therefore no discernible effect to current baseline conditions, it is concluded that the significance of effect of the continued use of the existing Plant Site is negligible.

4.14 Population and Human Health


4.14.2 In the UK, the public health profession uses the World Health Organization (WHO) definition of health, where health is defined as a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity\(^1\).

4.14.3 The process of determining the likelihood of significant health effects as a result of the Proposed Development and continued use of the Plant Site has been undertaken by considering the relevant parts of the assessments dealing with other environmental

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issues. Notwithstanding the lack of definition of ‘population’, potential effects on population in this case are considered in the Socio-Economics Section of this ES, see Section 28.

4.14.4 With regards to effects on human health, the key topics are considered to be:
- Air quality
- Noise
- Water Quality
- Flood Risk; and
- Highway Safety

4.14.5 On the basis of the findings of the air quality assessments undertaken it is considered that the Proposed Development and the continued use of the Plant Site will not have a significant effect on human health as a result of emissions to air and no further assessment is required.

4.14.6 On the basis of the noise assessments undertaken it is considered that the Proposed Development and the continued use of the Plant Site will not have a significant effect on human health as a result of noise emissions and no further assessment is required.

4.14.7 On the basis of the hydrological and hydrogeological risk assessment undertaken it is considered that the Proposed Development will not have a significant effect on human health as a result of impacts on water quality and no further assessment is required.

4.14.8 On the basis of the Flood Risk assessments undertaken it is considered that the Proposed Development and the continued use of the Plant Site will not have a significant effect on human health as a result of an increase in flood risk and no further assessment is required.

4.14.9 Given that there will be no changes in traffic flow as a result of the Proposed Development and the continued use of the Plant Site, it is considered that the scheme will not result in a detrimental impact upon the local highway network capacity or create any significant increase of collision risk on the local network. The effects on human health in terms of road safety are therefore not considered to be significant.

4.14.10 Potential effects on human health as a result of the Proposed Development and the continued use of the Plant Site have been addressed as part of the assessments undertaken dealing with other environmental issues. On the basis of the assessments undertaken it is considered that the Proposed Development and the continued use of the Plant Site will not have a significant effect on human health.

4.15 Climate Change

4.15.1 Sibelco has in recent times investigated the potential for local wind and solar power for
the Leziate site. Both energy generation methods had potential difficulties related to grid connection, environmental effects and current land use as well as issues with cost.

4.15.2 As an alternative, and in order to commit to reducing energy consumption, Sibelco has entered a climate change agreement at all its UK sites, including the site at Leziate. This agreement commits Sibelco to a 6.1% overall energy reduction target over eight years.

4.15.3 All Sibelco operations in the UK, including the site at Leziate, are certificated to ISO 50001:2011 Energy Management Systems and the company is a participant in the Energy Saving Opportunity Scheme (ESOS). ESOS is EU legislation which requires member states to introduce a mandatory programme of energy audits. Organisations must carry out ESOS assessments every 4 years. These assessments are audits of the energy used by buildings, industrial processes and transport to identify cost-effective energy saving measures.

4.15.4 Furthermore, as from 1st January 2018, Sibelco sources all electricity for the Company’s UK quarrying and processing operations from renewable sources.

4.15.5 The Plant Site currently processes around 850,000 tonnes of sand per annum of which around 70% is dispatched by rail. The balance is transported from the Plant Site by road via Station Road / Hill Road and the A47. The use of rail by Sibelco for a large proportion of product despatch from the site is beneficial in terms of greenhouse gas emissions compared to using HGV’s and transporting a larger proportion of product by road. The Proposed Development will not result in any increase to the current vehicle movements to and from the Plant Site and the ratio of product despatched from the site by rail will be maintained.

4.15.6 The Flood Risk Assessments undertaken for the proposed extension to Grandcourt Quarry, the continuation of mineral extraction at Grandcourt Quarry and the continued use of the Plant Site both include the consideration of future climate change as appropriate.

4.15.7 The Proposed Development is unlikely to significantly increase greenhouse gas emissions from the site. The extension to Grandcourt Quarry will be undertaken using the same mobile plant that is currently used in the existing quarry area and the proposed extension area and the current quarry area will not utilise mobile plant concurrently. Any increase in overall greenhouse gas emissions from the scheme compared to the currently approved quarry would be related to a further four years use of mobile plant to complete the total excavations. This will however be undertaken in conjunction with Sibelco’s targets for overall energy consumption reduction across the business. There are no changes proposed to the existing Plant Site or the manner in
which product will be despatched from the Plant Site and the Plant Site will continue to
operate in conjunction with Sibelco’s targets for overall energy reduction across the
business. The vulnerability of the quarry extension, existing quarry and the Plant Site to
climate change as a result of flooding has been assessed, as has the potential for the
scheme to increase the risk of flooding elsewhere.

4.15.8 On this basis it is considered that the Proposed Development and the continued use of
the Plant Site will not have a significant effect on climate.

4.16 Socio-Economic

4.16.1 The assessment undertaken indicates that the weight of the socio-economic impacts
associated with the proposed development of specialist sand extraction and the
restoration of the site is largely positive.

4.16.2 The application, if permitted is likely to lead to increased job security for the Applicant's
existing workforce, additional contract employment and investment in the local
economy. The Applicant employs over 45 people locally at the Quarry and the
processing plant. Around 80 more are employed in contracted related roles (earthworks,
land management, road transport and rail transport). The Quarry contributes to many
local businesses through further indirect employment involved in the supply of a wide
range of goods and services, in contract and other regular work. It is estimated that the
Applicant contributes at least £15 million annually into the economy in terms of wages,
the purchase of goods and services, business rates and capital investment.

4.16.3 Although there will be some change in the appearance of the site over time and other
issues that have a bearing on the overall amenity enjoyed by nearby communities
during operations, in the long term this will not result in a material adverse impact on its
overall amenity value.

4.16.4 Although two public rights of way will be affected, appropriate temporary and permanent
diversion route have been included in the scheme and an increase in public rights of
way will result from the restoration proposals. Although there will be a short term visual
impact for rights of way in the immediate vicinity, in the long term the amenity value of
the site will be likely to increase with the creation of areas of woodland, open water and
wetland habitat as a development of the nature conservation element of the proposals.

4.16.5 On balance therefore, it is considered that there is a significant positive overall impact
on the socio economic character of the area.

4.17 Cumulative Effects and Interactions

4.17.1 Whilst the existing Plant Site is not included in either the Grandcourt Quarry S73
Application or the Grandcourt Quarry extension application (with the exception of a small area associated with the access to Station Road), NCC has requested that Sibelco include the continued use of the Plant Site in the EIA. On this basis, the ‘EIA Scheme’ therefore relates to the Grandcourt Quarry extension application, the Grandcourt Quarry S73 application and the continued use of the Plant Site – all of which are the subject of this ES and which collectively should be considered in terms of whether or not they have the potential to have a significant cumulative effect with other existing and/or approved projects.

4.17.2 Other potentially relevant existing and/or approved developments have been identified as follows:

- Holt House Quarry;
- Blackborough End Materials Recovery Facility (MRF) / East Winch Landfill Site and Quarry; and
- Warren North tailing Lagoon

4.17.3 A review has been undertaken of approved applications for development using the Norfolk County Council Planning Application Search webpage and the Borough Council of Kinds Lynn & West Norfolk Online applications webpage and no other relevant existing or not approved but not yet implemented projects/developments have been identified.

4.17.4 All of the developments identified and summarised above are existing developments, as are the Plant Site and the existing Grandcourt Quarry.

4.17.5 These developments are all lawful and, as a result of the planning process and/or other regulatory regime (i.e. Environmental Permit), they have all been deemed to be environmentally acceptable both in isolation and cumulatively and are all subject to ongoing mitigation and management measures, where applicable (i.e. dust control, noise limits, archaeological mitigation strategies etc.) to ensure that they continue to be environmentally acceptable.

4.17.6 All of the existing nearby developments, including the Plant Site and the existing Grandcourt Quarry are therefore arguably part of the baseline forming the context within which the Proposed Development has been assessed.

4.17.7 Should the proposed extension to Grandcourt Quarry be approved then the majority of mineral working will transfer to the extension area and the day to day mineral extraction will not be undertaken in the existing quarry will not be worked at the same time. In terms of the potential effects of operations there is therefore unlikely to be any further or additional operational effects to those already experienced as a result of the existing mineral extraction in the currently approved quarry area.
4.17.8 The only change occurring as a result of the Proposed Development is the mineral extraction proposed in the extension area, in terms of land take, and by default the re-phasing of the existing quarry area and the extended time that it will take to complete the overall extraction and eventual restoration of the site – by an additional four years (over and above the current end dates from the existing quarry area).

4.17.9 The re-phasing of the existing Grandcourt Quarry area does not result in any change to the day to day operations of mineral extraction that could result in a significant effect. It is therefore considered that the re-phasing of the existing quarry would not result in a significant cumulative effect with any of the other projects identified.

4.17.10 The additional time that it will take to complete the mineral extraction overall (taking into account both the existing Grandcourt Quarry area and the proposed extension) will be four years, which will also have the same knock-on effect on the delivery of the final restoration scheme.

4.17.11 It is proposed that the mineral extraction areas will be progressively restored with the working parts of the quarry moving and the restoration following. Holt House Quarry is subject to a similar method of working and will be progressively restored as the mineral extraction continues to completion. It is not considered therefore that an additional four years of mineral extraction, where the assessments presented in this ES have found no likely significant effects, would result in a significant cumulative effect with any of the other projects identified.

Interactions

4.17.12 Interactions between more than one type of impact experienced at a particular receptor (e.g. a receptor of noise and air quality impacts) are managed in the context of effects following mitigation. In the case of interactions between noise and air quality (for example), potential impacts could be experienced simultaneously or intermittently. There is no direct connection between the effects, other than that both could cause annoyance, whether experienced separately or together.

4.17.13 Mitigation of combined effects is best achieved through management of operation to prevent the individual impacts themselves and reduce the likelihood of such interactions occurring.

4.17.15 The impacts on both ecology and the water environment as a result of the Proposed Development are dealt with in the respective sections of the ES and in neither case are significant effects as a result of interactions between ecological and water issues anticipated.

4.17.16 The potential for significant effects as a result of the interaction between ecology and landscape has been addressed through specific design management measures
including the extent, location and type of woodland and hedgerow planting proposed, the restoration landform itself and any features to be retained or proposed as part of the development.

4.17.17 A restoration scheme has been devised that maximised the potential contribution to enhance the ecology of the area and the range and diversity of habitats present within an appropriate landscape structure that reflects and complements the approved restoration scheme for the adjacent Grandcourt Quarry. This was based around the retention of soils on the site and their use in the restoration of part of the site to form a basis for future grassland on the lake banks, together with selected woodland habitat blocks.

4.17.18 In relation to the Plant Site, the potential interaction of impacts is considered where more than one impact may affect the same receptor.

4.17.19 The EcIA included at Section 21 of the ES considers the effect of the continued use of the Plant Site on identified ecological receptors within the Study Area. The EcIA found that there were no potential interactions that would result on an adverse effect on any statutory nature conservation designations, non-statutory nature conservation designations, habitats or species as a result of impacts to surface water, groundwater or air quality.

4.17.20 The Cultural Heritage assessment undertaken and included at Section 20 of the ES considers the findings of both the noise assessment and the lighting assessment undertaken in relation to the effect of the continued use of the Plant Site on the setting of heritage assets.

4.17.21 The air quality, noise and lighting assessments undertaken all identify common residential receptors. In terms of proximity the residential properties at the Plant Site entrance have the potential to be significantly adversely effected by interactions between impacts as a result of the Plant Site. However, given the fact that:

- the Plant Site is not a new development being introduced into a rural location; the Plant Site has been in-situ and operating for over 50 years;
- identification of an effect is often associated with a perceived change, there is no proposed change to the operation of the Plant Site; and
- Sibelco have received very few complaints over the past few years, any complaints received have been noted in the relevant assessments (noise and air quality) and the remedial actions taken by the Company detailed;

4.17.22 It is considered that, with the embedded mitigation in place at the Plant Site to prevent individual impacts themselves (and thereby reducing the likelihood of interactions occurring), it is unlikely that a significant adverse effect as a result of interactions
between more than one type of impact as a result at a residential receptor as a result of the continued use of the Plant Site, would occur.

4.18 Accidents and Disasters

4.18.1 Section 30 of this ES sets out a brief description of the potential significant adverse effects on the environment as a result of accidents and disasters. Details are provided of the measures employed by the company to prevent or mitigate any adverse effects.

4.18.2 Sibelco’s Accident and Emergency Procedure covers the following areas:

- Roles and responsibilities
- Injuries and fatalities
- Confined Space Emergency Checklist
- Summoning Emergency Services
- Raising the Alarm and Evacuation
- Assembly Point Locations
- Fire / Explosion
- Protests and Demonstrations
- Environmental Pollution to Water Circuit
- Environmental Pollution to Land
- Environmental Pollution to Air
- Public Relations / Media Response
- Communications and Reporting
- Incident Log Sheets; and
- Management of Major Incidents

4.18.3 A copy of Sibelco’s Accident and Emergency Procedure is included at Appendix 30.1 to the ES.

4.18.4 The occurrence of an accident or incident is not something that can be predicted nor can the effects of any such incident be quantified prior to an event occurring. Sibelco has a comprehensive and detailed plan detailed plan that sets out the procedures to be followed and actions to be taken in the event of an accident or incident, all of which are designed to mitigate adverse effects as a result of an accident or incident. Employees on-site are competent and trained to the appropriate level in accordance with their job role and receive up-to-date safety training as required.

4.18.5 On this basis it is considered reasonable to conclude that Sibelco have undertaken robust measures to be able mitigate the adverse effects of a result of an accident or disaster in so far as is possible.
5. CONCLUSIONS

5.1.1 The EIA undertaken as part of the development of the Application has considered in a comprehensive and detailed manner the potential environmental effects likely to arise from the Proposed Development. Whilst the existing Plant Site is not the subject of any application, the EIA also considered that potential for significant effects as a result of the continued use of the existing Plant Site.

5.1.2 The EIA has been undertaken in accordance with prevailing national guidance and the provisions of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. The results of the assessment are set out in the ES.

5.1.3 The EIA concluded that, with the embedded mitigation measures already incorporated into the scheme and further mitigation measures identified where required, the likely impacts of the Proposed Development are unlikely to have a significant effect on the environment and the development as proposed is acceptable. As a consequence of the mitigation measures identified during the EIA process, there are not likely to be significant or overriding residual effects in the long term and the Proposed Development is likely to result in significant local amenity and recreational benefits.
FIGURES

Figure NTS 1 - Site Location Plan
Figure NTS 2 - Planning Application Boundary (Extension)
Figure NTS 3 – Planning Application Boundary (S73)
Figure NTS 4 - Proposed Quarry Development
Figure NTS 5 - Extension Restoration Plan
Figure NTS 6 - Revised Restoration Masterplan
Figure NTS 7 – Plant Site Layout Plan