CEMEX UK OPERATION LTD

EXTENSION TO EXISTING QUARRY INVOLVING THE EXTRACTION OF SAND AND GRAVEL FROM THREE PARCELS OF LAND WITH RESTORATION TO AGRICULTURE AND HEATHLAND INTEGRATING WITH EXISTING RESTORED AREAS, RETENTION OF EXISTING AGGREGATE PROCESSING PLANT, SILT LAGOONS AND ACCESS / HAUL ROAD

C7/2012/7017

NORTON SUBCOURSE

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VOLUME 2 - ENVIRONMENTAL STATEMENT

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PART ONE (A) – ENVIRONMENTAL STATEMENT

1.0. INTRODUCTION

1.1 This statement has been prepared to provide information in support of the Company’s planning application for sand and gravel extraction and retention of existing plant and access haul road from the Ravingham Estate, Norton Subcourse, and Norfolk as an extension to the existing quarry on adjacent land, with restoration to agriculture and heathland.

1.2 The Environmental Statement (ES) comprises this statement and the Technical Appendices contained in this volume 2. And a Non-Technical Summary contained in Volume 3. Hard copies of the full submission (Volumes 1 to 3) may be purchased at a cost of £80 from Kirsten Hannaford-Hill, Development Planner, UK Operations, CEMEX House, Evreux Way, Rugby, CV21 2DT. Individual CDs are priced at £5.

Environmental Impact Assessment

1.3 The proposed development is to form an extension to the applicant’s existing operations at Norton Subcourse Quarry and consists of the extraction of approximately 2.37 million tonnes of sand and gravel over a period of approximately 11-21 years from areas of agricultural land covering approximately 25 hectares. The land would be restored to agriculture and heathland. It is considered the proposals constitute “EIA development” within the meaning of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 and having regard to the selection criteria for screening Schedule 2 development and the advice contained in Circular 2/99 and the characteristics of the impacts that they had identified (see Appendix 1 to this Statement).

1.4 The Company has therefore prepared this Environmental Statement in order to address those matters and to provide information to assess the environmental effects of the proposals.

97/11/EC and they, together with the accompanying Department of the Environment, Transport and the Regions Circular 2/99 and Statutory Instrument 2011 No. 1824 Town and Country Planning (Environmental Impact Assessment) Regulations 2011 provide guidance on the information to be included in Environmental Statements and the procedures to be followed.

1.6 The Statement seeks to provide an objective account of possible environmental effects of the development that is the subject of this application.

Location

1.7 Cemex UK Materials Ltd operates the existing mineral extraction and processing plant at Norton Subcourse Quarry. The quarry is located approximately 12 miles south-east of Norwich, and 7.5 miles to the west of Great Yarmouth. The village of Norton Subcourse lies some 0.5km to the south east, with Hales some 3 km to the south west, and Loddon some 4km to the west. Some 3 km to north, alongside the River Yare, is the village of Reedham with the Cantley Sugar Beet Factory situated 350 metres to the north-west adjacent to the river. Access to the site is via a haul road. The Ordnance survey national grid reference is TM 401 993. The site is located within the County of Norfolk and District of South Norfolk. The site falls within the parishes of Norton Subcourse and Heckingham.

1.8 The quarry takes its access via a private cross-country haul road from Ferry Road, close to its junction with the B1136 Yarmouth Road to the south, which connects the villages of Hales and Haddiscoe. This haul road is for use exclusively by quarry traffic. The site is well located to the A146, A140, and A11 all leading off the B1136.

1.9 In landscape terms, the site occupies a position within an area of gently undulating countryside close to the point where the land falls away to the north and west where it becomes the flat, open grazing marsh of Norton Marshes. It comprises three parcels of land which include fields in arable use, hedgerow, advanced planting along the northern, western and southern boundaries. These trees have reached an average height of 2 metres, with some younger trees to the south reaching 1 metre, providing effective screening to the site.
1.10 The proposed application is sought with the continued use of the existing quarry and also takes in the existing processing plant, freshwater and silt lagoons, product stockpile area and access road.

1.11 The application site, outlined in red, covers a total of approximately 39.1 ha although the extraction area would be just under taking into consideration standoffs and screening mounds and ancillary plant area. The application site consists of three parcels of land the first is located to the north of the existing extraction area and bound by Ferry Road, advanced tree planting to the north and existing extraction area to the south. The second parcel of land is located to the south of the current mineral working and bound to the west by Ferry Road and to the south by Loddon Road and to the east by the existing haul road. The southern area is bound by mature hedgerow and advanced planting along the southern boundary. The third parcel of land is located to the north east of the existing silt lagoons and plant site. This area is currently agricultural use and is bound by hedgerow, agriculture, advanced tree planting and farm track.

1.12 The proposed extraction areas sensitive receptors are located 80m to the east of Beacons Farm, 50m south of Hill House, 182m north west of Sunnyside and Highfield Farm. Norton Hall and lies 330m north of the proposed extension area.

1.13 As stated above the application areas are currently in agricultural use. The sites agricultural land classification can generally be classified as Grade 3 agricultural land with the majority of the site subgrade 3b and with small patches of subgrade 3a which complements the surrounding agricultural classification.

1.14 There are no rights of way crossing the site. The closest rights of way are the connected public footpaths nos. 1, 2 and 3 (Norton Subcourse) to the east, public footpath no.3 (Heckingham) to the west of the access road, and public footpath no.5 (Langley with Hardley) alongside the River Chet to the west.
1.15 The Norfolk Broads lies to the north and west, with the Broads Authority area boundary following Low Road to the north and Ferry Road to the west. Part of Norton Subcourse is identified as an ‘Area of High Landscape Quality’, in the South Norfolk Local Plan.

1.16 There are no Sites of Special Scientific Interest (SSSI) or County Wildlife Sites (CWS) within the site or adjacent to it. The nearest SSSI is ‘Hardley Flood’ situated approximately 0.9km to the west. This has been notified principally for its bird interest and is one of a number which form the Broads Special Protection Area, a designation designed to protect wild birds. It is also designated a RAMSAR site due to its importance as a wetland habitat. Consideration is given part 3 of this Statement - Assessment of Environmental Effects - to any potential effects upon this SSSI.

1.17 There are no County Wildlife Sites (CWS) within a 2km radius of the site, the closest being that which lies to the east of Lower Thurlton, with a second CWS to the south-west of Hales.

1.18 The quarry is well placed to serve local building suppliers and concrete plants in Norfolk, Suffolk and East Anglia Region

History

1.19 In 1967 planning permission was granted for sand and gravel extraction from land immediately to the north of the existing quarry. Vehicular access to that area was gained from Low Road to the north. Those mineral reserves were extracted by Atlas Aggregates Limited, also an RMC Group company, which now forms part of Cemex UK Materials Ltd.

1.20 In 1989 the landowners applied for planning permission to extract 2.37 million tonnes of sand and gravel from some 25 hectares of land lying to the south of the 1967 permission area. This also encompassed part of the 1967 area, which now contains
the current freshwater and silt lagoons. The application also proposed the importation of inert waste for restoration purposes. To provide access to the site, a 2½ km long private haul road was proposed to take vehicles across agricultural land to join with the public highway close at Ferry Road close to its junction with Yarmouth Road.

1.21 Planning permission for this proposal was granted to the landowners in 1990, with a time period to 2010 allowed for completion of mineral working and restoration. The site haul road, as shown on plan P2/982/1B, was constructed as part of that permission. This crosses two intervening public highways, Loddon Road and Boundary Road.

1.22 Atlas Aggregates subsequently acquired the rights to work and restore the area. Cemex has since become the operator of Norton Subcourse and have inherited the planning permissions and obligations. A number of conditions attached to the permission required schemes of working and restoration to be submitted to the County Council for approval. This was undertaken by the Applicant, who has now agreed a revised restoration scheme which provides for the return of the land to agriculture along the upper ridges, heathland in the quarry associated water feature and tree planting.

1.23 Mineral extraction operations have progressed through a substantial part of the site with the extracted mineral supplying a centrally located processing plant where it is washed and separated into various grades of sands and gravels. These products are supplied to the general market.

1.24 The current planning permission was granted on 26th October 2010 by Norfolk County Council subject to 26 conditions. As of the end of 2013 the quarry was estimated to have remaining reserves sufficient for some 3-4.5 years. Those reserves are concentrated largely in the north-west corner of the quarry, within the currently approved Phases 6-9. The current application therefore seeks permission for additional reserves, which would allow the quarry to continue to serve its existing markets.
1.25 The Company, in seeking planning consent to continue to extraction mineral and maintain the internal haul road, plant and ancillary land.

**Description**

1.26 This proposal is for approximately 2.37 million tonnes of sand and gravel extraction from an area of approximately 25 hectares spread over three parcels of land and 6 phases. The application area also includes the storage of soil and overburden. Following extraction the site will be restored at the lower level to agriculture and heathland to complement the permitted restoration scheme at Norton Subcourse Quarry.

1.27 The proposal involves the continued use of the existing access and 2 1/2 km haul to the public highway onto Yarmouth Road, reception facilities, aggregate processing plant, and the silt and freshwater lagoons.

1.28 Geological investigations have indicated that the site contains 2.37 million tonnes of sand and gravel at an average thickness of 5 metres in the north east, 9m in the north west and 10m in the south although all operations would be undertaken above ground water level which is approximately 8m below ground level restricting extraction depths. See Geological Report in Appendix 6 within the Planning Statement. It is estimated that this reserve of mineral would enable operations to continue at the quarry for an additional 11-21 years. The proposal areas would be worked in 6 phases as an extension of the existing quarry, at a current rate of approximately 100-200,000 tonnes per annum: ultimately the extraction rate would depend on the strength of the demand from the local market. The proposed extension would continue once extraction has ceased within the existing permitted area. Access to the proposed extension area would be gained by the main internal haul road. Internal traffic signs and routing would ensure limited impact upon road driven HGV’S along the internal haul road between the plant and phase 13. The proposed extension would not increase annual output from the site only increase the duration of mineral extraction at the site by an additional 11-21 years.
1.29 The mineral would be excavated using a 360 degree hydraulic excavator and transported to the existing processing plant at the quarry via dumper truck. Material would be transported to the processing area via dumper trucks, raw material would be stockpiled within the existing plant site stocking area ready for processing and sale.

1.30 The general approach to the extraction of sand and gravel from the 6 phase will be that each phase will be worked progressively, with restoration following on from extraction. Any vegetation would be cleared and appropriate ecological surveys undertaken to ensure no protective species would be affected. Archaeological investigations would be undertaken in accordance within an approved Working Scheme of Investigation as soils and overburden are stripped, this material will be stored in bunds providing acoustic and visual screening to the operations where necessary. Once sufficient space is available within the excavated area some soils and overburden will be directly placed for restoration (see method of working plan P2/982/3A). Each face will be worked to an angle of 1 in 2.

1.31 Overall approximately 20,000m$^3$ of overburden / soils shall be removed within the north eastern area, 22,000m$^3$ from the north western area and 46,000m$^3$ from the southern area. All soils and overburden shall be retained on site and used as part of the reclamation of the site.

1.32 A 360 degree back actor excavator and a dumper truck will be used in the soil stripping operations. The storage bund will be formed by the loose placement of stripped soils by the dumper and shaped using a bulldozer with low pressure tracks. Topsoil and overburden will be stored separately within bunds to a maximum height of 3m and seeded maintained until replacement.

1.33 All personnel involved with the soil stripping and restoration of the application site will be given specific instructions from the Quarry Manager with regard to the importance of conserving soil resource and not causing inadvertent loss or damage. No soils will be moved in wet weather or when ground conditions are not suitable.
1.34 It is proposed to continue to operate the quarry on the same hours and days as currently permitted which are:

07.00 – 18.00 Monday to Friday
07.00 – 13.00 Saturdays

And no such operations shall be carried out on Sundays or Public (bank) Holidays.

1.35 As stated above the proposal will continue to use the main site access onto Yarmouth Road (via Ferry Road). The traffic movements associated with the proposal would continue at a similar rate. The proposed extension will only result in the continuation of current production levels. As a result traffic movements associated with these operations will remain the same as currently experienced at the permitted quarry site.

1.36 The access route to the quarry was designed with this level of traffic in mind and the company strictly adheres to the designated access route and agreed practices. The type of vehicles which enter the site, vary greatly depending on the requirement of each customer. Typically the average vehicle is a two tonne truck with the largest vehicles to visit the site having a twenty tonne capacity.

1.37 The Company has included the aggregate processing plant complex and haul roads within the application boundary.

1.38 Equipment Required

*Processing Plant*

1.39 The static processing plant would be retained within the existing quarry for the crushing, washing and grading of the excavated sand and gravel. This is located on the base of the previously excavated area, some 8.0 metres below the surrounding ground levels as shown on plan ref. NSUB_PLA_982_CAW_251012.
1.40 The existing fresh water and silt lagoons would similarly be retained in order to allow for settlement of the silt fraction washed from the sand and gravel, and also to supply fresh re-circulated water to the plant.

1.41 The existing finished product stockpile area would also be retained, as will the workshop building, weighbridge, site office/messroom and car park area. The existing weighbridge, weighbridge office, electricity cabin, toilets, quarry managers office, parking and static processing plant shall continue to be located as illustrated on plan NSUB_PLA_982_CAW_251012. A list of equipment located at Norton Subcourse is listed within Appendix 9 of the planning statement and includes the processing plant and mobile plant.

Mobile Plant

1.42 A number of elements of mobile plant are required, namely:

i) **Soil Stripping and Handling** – soil and overburden would be removed using a hydraulic excavator with dump trucks being used to take the material to either create a temporary storage/screen bund to place the soil directly on to a previously worked area for final restoration.

ii) **Mineral Extraction** – this would entail the use of a 360 degree excavator / wheeled loading shovel working on a bench set below ground level. The shovel would also be used to load the mobile screening plant (see below).

iii) **Mobile Screening Plant** – a single screen would be positioned in the vicinity of the working face on the base of the working in order screen the extracted sand to remove clay material. Based upon advice from the consultant who undertook the noise assessment, the mobile plant would be sited no closer than 300m to Hill House cottages and 200 metres Beacon House.
iv) **Lorry Loading** – a second wheeled shovel would be employed within the plant area to feed the plant with raw material for processing, loading lorries with the finished products and general stockpile handling.

All of this plant currently operates in this manner within the existing extraction area.

1.43 The quarry currently employs a workforce of five who would continue to be employed for the working of the extension area.
2.0. ENVIRONMENTAL ASSESSMENT REGULATIONS


2.2. Under DETR Circular 02/99 (Annex A ) indicative thresholds and criteria for identification of Schedule 2 Developments requiring Environmental Impact Assessment (EIA) are provided for the extractive industry (A7). Under the heading of ‘Surface and underground mineral working’ it states the following:

‘A7. The likelihood of significant effect will tend to depend on the scale and duration of the works, and the likely consequent impact of noise, dust, discharges to water and visual intrusion. All new open cast mines and underground mines will generally require an EIA. For clay, sand and gravel workings, quarries and peat extraction sites, EIA is more likely to be required if they would cover more than 15 hectares or involve the extraction of more than 30,000 tonnes of minerals per year.’

2.3. The application site itself has been assessed internally to determine if an environmental assessment is required. The proposed development is not Scheduled 1 development under the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011. The development does fall under schedule 2 development and therefore needs to be assessed against the indicative thresholds and criteria for identification of Schedule 2. The development is over 15 hectares and extraction shall exceed 30,000 tonnes per annum. Although the development is not in a sensitive location it is considered it may be likely to have significant effects on the environment. It is therefore concluded that an environmental statement is required under the Town and County Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 and an Environmental Statement has therefore been submitted with in the planning application.
3.0. THE ASSESSMENT TEAM

3.1. A number of in-house and external specialist consultants have been engaged to advice on the formulation of the proposals, and its potential environmental effects. Information on these for the relevant subject area is set out in the paragraphs below:

Ecology
3.2. Andrews Ecology was appointed to conduct an ecological assessment of the application site.

Landscape and Visual
3.3. The Landscape Partnership who has experience in preparing LVIA’s in relation to proposed mineral developments were instructed to undertake a landscape assessment and assist in the proposed restoration scheme.

Hydrogeology and Flood Risk
3.4. Principle Hydrologist at Cemex assisted the analysis of Flood Risk of the proposed extension area and undertook a Hydrological Assessment.

Noise
3.5. Walker Beak Mason was appointed to assess the noise impact of the proposed development on nearby residential properties.

Archaeology
3.6 Mr Adrian Havercroft – The Guildhouse Consultancy was commissioned to undertake an assessment of the archaeological implications of the proposed development.

Air Quality
3.7 Cemex undertook the assessment of air quality internally

Soils
3.8 Dr S McRae undertook a soils analysis and agricultural land classification on behalf of Cemex
4.0. THE SCOPE OF THE ASSESSMENT

4.1. This statement has been prepared to provide objective environmental information to the Mineral Planning Authority (Norfolk County Council) to enable it, following consultation with a range of technical expertise, to assess the environmental effects of the proposal. Such an assessment will be made by officers of the Council to the members of the Planning Committee and will be a material consideration in the determination of the application by the Council.

4.2. Environmental Impact Assessment is a structured procedure which enables the likely effects of a development to be considered, thereby enabling environmental improvements and mitigation measures to be incorporated into the design at the early stage of project planning. The assessment identified all issues of potential environmental and amenity concerns that might arise from the construction and operational aspects of the project.

4.3. A screening opinion was sought from the County Council November 2008 and a response was received January 2009 see appendix 1. The Environmental Assessment has taken into consideration the comments and potential impacts related to the proposed development it was considered that the following areas should be addressed within the ES

1. The visual effects of the development – An assessment has been carried out.
2. The potential flood risk – This has been considered
3. The effects on the quality of groundwater and surface water bodies – This has been considered
4. The effects upon ecology and biodiversity – An assessment has been carried out.
5. The effects of noise upon local sensitive receptors - This has been considered
6. The effects upon air quality – This has been considered
7. The effects upon archaeology – An assessment has been carried out.
8. The effects upon the highway network – This has been considered
9. The effect upon soil quality and agricultural land classification – This has been considered
10. Need and the planning policy context – The Applicants steer on both have been set out in the Planning Statement (Vol 1). It is considered that it is more appropriate for it to be included there rather than within the more objective Environmental Statement. However, as some of the assessment refers to planning guidance and policies a policy schedule is attached in appendix 9 to this statement.

11. Provision for monitoring – Provision for monitoring has been made where it has been concluded that this is necessary in the individual assessments.

**Statement of Community Involvement**

4.4 Statement of Community Involvement is an acknowledged and important aspect of the Environmental Impact Assessment process which can assist scoping and technical assessment. All consultants have directly communicated with statutory consultees related to their specialist topic as and where necessary.

4.5 The company delivered a leaflet to surrounding properties to the proposed extension and existing extraction area. It was request the leaflet be enclosed within Norton Subcourse Parish news letter. Copies of the leaflet were also left with the Norton Subcourse Parish Council and also sent to Hales Parish Council for distribution to their member. The Company has confirmed attendance at Norton Subcourse Parish Council once the application has been submitted. No formal comments have been received as part of the leaflet drop.
5.0. ALTERNATIVES

5.1. An important element of the Environmental Assessment process is the examination of the main alternatives to the proposed development and the main reasons for the choice taking into account the environmental effects. In this instance it is considered that the following alternatives are available to the Applicant:

- Do nothing at all
- Rely on alternative supplies of mineral either from local sites or through importation to supply local contracts
- Bring forward the application at a later stage
- Bring forward alternative new sites in the vicinity

5.2. The planning statement contained in Volume 1 makes the case that the release of new reserves from the site will contribute to the maintenance of supplies to existing markets served by the current quarry. It is imperative that new reserves of mineral are brought forward at this stage because existing reserves at the quarry are declining and the proposed extension provides a continued product source.

5.3. The release of these reserves would reduce reliance on alternative supplies of mineral which is not a practical proposition as it would lead to supplies either being drawn into the county from elsewhere or excessive transportation of material. Alternatively production from other mineral sites in the county might be increased but this would only mean that reserves at such sites would be taken up more quickly. Nor could the demand be met by ‘alternatives’ such as secondary and recycled aggregate because these materials are simply not of sufficient quality to be able to replace all sands and gravel products from Norton Subcourse. As the proposed mineral varies in deposit type from Haddiscoe Sand and Gravel to Cordon Sand and Gravel and Leet Hill product ranges at Norton Subcourse shall vary and increase.

5.4. If the proposed extension were to be brought forward at a later stage there would be pressure on the effectiveness of the site, economic viability and ability to meet market demand. The quarry would have to close temporarily with the resultant loss in employment that may not be adequately replaced should the site reopen there could
also be a negative impact upon interim restoration and ecological consequences. In any event it is sustainable practice to maximise the recovery of as much mineral as possible to the highest grade as possible before the closure of a unit takes place and new sites are opened up.

5.5. The ‘Do Nothing Option’ would simply mean that the quarry would have to close and there would ultimately be increased pressure for new reserves to be identified from elsewhere in the county. As a consequence the delivery of the biodiversity benefits offered as part of the package of proposals could not be realised and recognised reserves sterilised.
PART 2 – ENVIRONMENTAL STATEMENT

1.0. ASSESSMENT OF ENVIRONMENTAL EFFECTS

1.1. The following section of the Environmental Statement presents an assessment of the environmental effects likely to arise from the development proposal. These include:

(a) An assessment of the existing situation to establish the environmental sensitivity of the area(s) likely to be affected by the proposed development.

(b) An assessment of the development in terms of:
   • Scale
   • Cumulative impact with other development
   • Use of natural resources
   • Potential to generate waste
   • Pollution or nuisance
   • Risk of accidents or injury resulting from the development

(c) A description of the measures envisaged to prevent, reduce and where possible mitigate any significant adverse effects on the environment.

1.2. The Environmental Assessment Regulations stipulate that the data required to identify and assess the main effects on the environment should be included in the Environmental Statement. Therefore each chapter in this statement should be read, where appropriate, in conjunction with the Technical Appendices contained in this volume.

1.3. A brief Non-Technical Summary of the information contained in Volume 2 is set out in Volume 3.
2.0 ECOLOGY

2.1 The Environmental Impact Assessment Directive (85/337/EEC) states that the direct and indirect effects of development should be assessed in terms of their impact on specific factors. Based on the factors identified in Article 3 of the EIA regulations, the direct and indirect effects of the proposal in species and habitats have been assessed. The Minerals Core Strategy for Norfolk contains polices and text concerning ecological impact issues in connection with development proposals, in particular DM1.

2.2 Norton Subcourse Quarry was developed in the 1960’s as an operational sand and gravel pit. The earlier sand and gravel excavation was undertaken to the north and east of the existing plant site. The southern parts of the site, including the present application site, were shown on historic OS maps as consisting of agricultural land.

2.3 The present ecology of the application area is described in the Ecological Evaluation as tillage with uncultivated margins and semi mature plantation and mature oaks and boundary hedgerow, report by Andrew Associates, which forms Appendix 2 to this Statement.

2.4 The application site has historically been sown with cereals and held only scattered specimens of creeping thistle, small nettle and very occasional dwarf mallow in the margins. The individual fields commonly had a field margin of 4-6m uncultivated with evidence of use by 4x4 vehicles associated with game keeping in relation to pest control and replenishment of pheasant feed hoppers. All hold a similar sparse and heavily rabbit grazed sward. The plantation in the north west corner shall be thinned as part of the proposed development. These are young trees 5-7m in height and 0.15m diameter the understory is limited to stinging nettles and brambles. There are two advanced tree plantations to the north east and southern boundary of the southern extension area which include scot pine and birch. There are various hedgerows within the proposed development varying in structure and range from well
maintained and stock proof to discontinuous lines of mature trees and scrubs. Due to the low number of woody species, impoverished ground flora and lack of associated features none of the hedgerow qualify as improved under the ecological criteria for the Hedgerow Regulation 1997.

2.5 There are various mature trees within the proposed extension area. The land to the north east includes 9 mature trees, as part of the proposed development the Company proposes to fell some of these trees as part of mineral extraction but those trees shall be replanted through restoration. It is proposed trees No5-7 of the ecological report shall be removed. No bats were identified in these trees although there is potential for roosting. Within the southern phases 16 mature trees have been identified in the ecological assessment of which the Company proposes to fell 4, trees No.5-8 to enable mineral extraction. The ecological survey did not identify any bat during the survey although the trees do provide moderate potential for bat roosts. A bat survey would be undertaken prior to any tree felling.

Fauna

2.6 Although the site is identified as a UKBAP location for wall butterfly it is improbable that they occur in the three extraction areas due to current agricultural practices, fertilizer and uniform and unbroken ground.

2.7 Tilled farmland is a very common and widespread habitat over lowland Britain and as the habitat is abundant in by far the majority of cases so too are associated species. Whilst the range of plants species present within the uncultivated field margins is wider than that within the tillage itself, the species composition still only consists of a limited range of species common to road verges and waste ground and therefore widespread nationally.

2.8 The hedgerow species mix, ages and length is limited reducing any value to invertebrates or habitat value. The mature trees do not have significant dead wood or
connecting hedgerows that would support uncommon saproxylic species and related invertebrates species.

Amphibians

2.9 There are no water bodies within any of the three parcels of land and no suitable breeding ponds within 500m. The site does include silt lagoons and fresh water lagoon. The condition of the existing silt lagoons, the lack of an egg-laying substrate, the surface flow and drainage, and their location; entirely isolated from potentially suitable terrestrial habitat by a dry and arid landscape of bare rock and compacted gravel to render them wholly unsuitable as breeding ponds by great crested newts. Furthermore the terrestrial habitats within all three land areas and the locality as a whole represent an inhospitable landscape for amphibians. It is therefore concluded that great crested newt, palmate newt and smooth newt have not colonised the complex.

2.10 There is limited probability of common frogs and toad due to the pressures from predator game birds and negative effects of surface flows present within any of the land areas.

Reptile

2.11 A single adult grass snake found 100m to the north was identified in 1995. The three extraction areas were assessed for their potential to support reptiles such as the slow worm, viviparous lizard, adder and grass snake. The likely reptiles have differing habitat preferences but tillage is unsuitable for even casual occurrence of any reptile species and the plantation woodland does not support a suitable understory. The hedgerows are almost bare of vegetation and the tree lines hold only small and isolated pockets of sub-optimal slow worm habitat in bramble patches. The poor habitat quality combined with the presence of high densities of game birds, which are key predators of Juvenile reptiles, will preclude the persistence of a permanent population of any reptile species within all three land parcels.
Birds

2.12 Due to the agricultural land use, poor hedgerow species and limited habitat value it is concluded that the habitats in the three areas is likely to support no more than three species that are listed as Birds of Conservation Concern. Species include skylark, kestrel and dunnock which are widespread in the area.

Bats

2.13 As the main land use is tillage which is poor foraging habitat for bats it is predicted that none of the three extraction areas will represent an important foraging area for bats of any species. Whilst tillage is of low value for foraging bats, the plantation woodland edges, tree-lines and hedgerows may provide some limited foraging potential and more probably sheltered commuting routes between preferred foraging areas in the wider countryside. No bats were found on site although 17 trees within the application area provided potential if only be virtue of their heavy ivy cover to hold roosts.

Dormice

2.14 Due to the poor hedgerow, isolated planting and lack of food sources it is concluded that dormice will not occur within any of the three land areas.

Badgers

2.15 No badger sett were present within any of the three land areas and no evidence to suggest even casual presence.

Other Mammals

2.16 There was evidence of rabbit and hedgehogs but no evidence of other mammal species.

Conclusion
2.17 Habitats within the site and all the plant species recorded are of common and widespread occurrence. Due to the low number of woody species, impoverished ground flora and lack of associated features none of the hedgerow qualifies as important under the Hedgerow Regulations 1997.

2.18 All three areas have low value to common and widespread invertebrate species, no great crested newts were present or likely to occur nor will other reptile species.

2.19 The breeding and wintering bird’s assemblage is predicted to compromise small populations of common and widespread species. 17 trees have the potential for bat roosting in the heavy ivy on the mature oaks. Dormice shall not occur and there was no evidence of badgers.

2.20 The proposed extension areas do not support uncommon species or habitats and it is consider all surveys have been completed necessary to determine the proposed planning application.

2.21 It considered those trees being retained within the north east area and southern phases shall continue to provide ample bat roosting potential. A bat survey shall be undertaken prior to any tree felling.

2.22 It is considered that there would be more conservation value during the short term mineral extraction through bare ground for hymenoptera and other insects.

2.23 The proposed restoration scheme could improve hedgerow quality, connectivity and habitat diversity.

Conclusion

2.24 It is considered that the proposed extension areas shall not have a negative impact upon the local or wider environment or ecological habitat. Mitigation measures /
compensation measures shall be implemented through ecological surveys, phased extraction, progressive restoration, reduced working hours, limited lighting, no dewatering, landscape management, monitoring and enhanced restoration to ensure compliance with policy DM1 and protect local nature conservation.
3.0 LANDSCAPE ASSESSMENT

3.1 The Environmental Impact Assessment Directive (85/337/EEC) states that the direct and indirect effects of development should be assessed in terms of their impact on specific factors. Based on the factors identified in Article 3 of the EIA regulations, the direct and indirect effects of the proposal on the landscape and visual impact have been assessed. The Minerals Core Strategy for Norfolk contains polices and text concerning landscape impact issues in connection with the proposal, in particular DM8.

3.2 The application site lies within the District of South Norfolk within the County of Norfolk. The extraction areas cover approximately 25ha and slopes down from the highest point of (c20AOD) in the north to the lowest in the south west corner (c.13AOD).

3.3 The topography of the surrounding landscape forms a rolling landform, with low ridges aligned on a north to south axis.

Landscape Context

3.4 The site is located at Norton Subcourse, on slopes that rise gently up from the low lying land of the Broads to the north, and compromise three parcels of land that sit on an undulating plateau.

3.5 The three parcels are currently used for arable agriculture. Advanced tree planting around the boundary shall screen the site. These plantations are still establishing to the north east and south and needs regular maintenance to fulfill their full potential which will be brought into the Company’s control.

3.6 The overall impression of this landscape is of an undulating plateau that is largely under arable cultivation and is characterized by medium fields, hedgerow boundaries with some mature field oaks provides vertical height and some significant vegetation screening views of the Broads and flood plain. Settlements and farmsteads sit comfortably within the fabric of the trees and vegetation. Visual detractors include utility structures e.g. pylons and electricity cables that run with and east to west...
orientation also dominant is the permanent Cantley sugar beet factory to the north west of the site.

National Designations

3.7. The Countryside Commission and English Nature published (2005) a broad landscape character key to England, defining areas in terms of their landscape, wildlife and natural features, with approximate boundaries of areas being shown on their landscape character map. The application site lies within JCA South Norfolk and High Suffolk Claylands and North East Norfolk and Flegg. The key characteristics of this are described in paragraph 4.1.23 of the report in Appendix 3 to this Statement.

3.8 Norfolk and Suffolk Broads lie over 1km to the north of the proposed extraction areas. Surrounding landscape features outside of the application area and within 2km of the site are as follows;

Parks and Gardens of Special Historic Interest

3.9 Raveningham Hall – Listed Grade II, landscaped park, walled garden and woodland, C.60ha.

Langley Park – Listed Grade II C18, Landscape Park and woodland, attributed to capability Brown at extensive C.220ha, since 1949 in divided use.

Scheduled Monuments

3.10 Restored Cross (Near Norton Drainage Mill)

3.11 Land Use consultants have carried out a landscape assessment for South Norfolk District Council (South Norfolk Landscape Assessment 2001) the site is located within C2; Tributary Farmland with Parkland which has the following key characteristics;

- gently undulating landform created by small tributary valleys;
- transitional landscape between the upland plateaux and river valley landscapes;
3.13 The potential effects and significance of the designations and classifications would particularly within the tributary valleys;
wooded parkland with areas of pastoral farmland and horse grazing;
peaceful medium to large-scale arable farmland with occasional small fields of speciality crops such as sunflowers or asparagus bounded by banks of coppiced willows;
scattered small farm woodlands including ancient woodland;
sparse hedges and hedgerow trees;
dispersed, evenly distributed settlement pattern of small farmsteads and nucleated villages;
intricate network of small rural roads often bounded by banks or ditches;
tributaries elusive, often hidden within the landscape by topography or trees, particularly where they are associated with parkland;
mixed architectural character;
isolated flint round towered churches particularly evident;
characteristic large detached halls and manor houses.

Local Designation

3.12 Loddon and Chedgrave Conservation Area and Haddiscoe Marshes Conservation Area are located within 4km of the proposed extension areas

Potential Effects and Significance

3.13 The potential effects and significance of the designations and classifications would mainly be identified with the Norfolk and Suffolk Broads. There are visual connections between the site and the Broads to the north / north east and therefore the proposed extraction would have a short term adverse impact on their visual quality, setting and amenity. However the workings are temporary in nature, there would be limited to short term and no long term impact on the Broads landscape once advanced planting becomes effective and the land is restored.

3.14 The proposed development would have no physical impact or visual influence on the character or setting of the Loddon and Chedgrave Conservation area.
3.15 The proposed development shall have no long term impact on the visual setting of the restored cross (scheduled Monument) from the flood plain. Whilst the works themselves would have a slight impact during early stages of construction this would be very short term and temporary as advanced planting quickly becomes effective.

3.16 The proposed development would have no impact on the character of visual qualities of any parks or gardens on English Heritages Register of Parks and Gardens of special historic interest.

3.17 The Landscape and Visual Assessment report in Appendix 3 to this Statement assesses the landscape character and visual impact of the proposed extraction areas revised restoration proposals upon the landscape. In doing this it describes, inter alia, the topography, vegetation and landscape features, historic land use, landscape character and policy framework. It then describes a visual impact survey that was undertaken in order to identify the current views in to the site and to assess the significance of these views.

Visual Impact Assessment

3.18 Existing views of Norton Subcourse Quarry and the proposed extraction areas were assessed initially varying over a distance of two kilometres. These views included Wherrymans Way and Reedham public footpath, Gospel Hall, Quay Terrace, Reedham, Hardley Drainage Mill, New Road, Firs Farm, Low Road, Ferry Road, Church of St Margaret, Church of St Mary and Loddon Road all view points are illustrated on Figure 4 within the landscape assessment.

3.19 Property views are predominately from first floor windows due to existing screening of hedgerow and topography. Occasional views are available along Ferry Road also Wherrymans Way. Significant views are from Loddon Road into the proposed southern extraction area and haul road although dominated by electricity pylons.

Potential Effects and significance
17 visual impact points were assessed and are summarised in table 3.1 below, the full assessment is located within chapter 4.5 of Landscape Partnership’s Landscape Assessment Appendix 3 to this statement. The key views that will be moderately impacted by the proposed extraction areas are Firs Farm, New Road, Sunnyside / Highfield Farm and Beacon Farm. Mitigation measures to reduce the significance include; soil bunds, maturity of advanced tree planting and progressive restoration.

<table>
<thead>
<tr>
<th>Location</th>
<th>View</th>
<th>Sensitivity</th>
<th>Significance during extraction</th>
<th>Significance once restored</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wherrymans Way</td>
<td>1</td>
<td>Slight</td>
<td>Medium low</td>
<td>Negligible</td>
<td>Impact during soil stripping slight magnitude of impact to a receptor of high sensitivity</td>
</tr>
<tr>
<td>Reedham</td>
<td>2</td>
<td>Slight</td>
<td>Medium low</td>
<td>Negligible</td>
<td>Impact during soil stripping slight magnitude of impact to a receptor of high sensitivity</td>
</tr>
<tr>
<td>Quay Terrace</td>
<td>3</td>
<td>Slight</td>
<td>Medium low</td>
<td>Negligible</td>
<td>Impact during soil stripping slight magnitude of impact to a receptor of high sensitivity</td>
</tr>
<tr>
<td>Hardley Drainage Mill</td>
<td>4</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Negligible magnitude of impact to a receptor of high sensitivity</td>
</tr>
<tr>
<td>New Road</td>
<td>5</td>
<td>Moderate</td>
<td>Medium</td>
<td>Medium to low</td>
<td>Completion of hedgerow impact would reduce to slight of low significance</td>
</tr>
<tr>
<td>Firs Farm</td>
<td>6</td>
<td>Moderate</td>
<td>Medium high</td>
<td>Medium low</td>
<td>High sensitive receptor after 15y and maturity of tree planting impact will become negligible</td>
</tr>
<tr>
<td>Low Road / Ferry Road</td>
<td>7</td>
<td>Slight</td>
<td>Medium – low</td>
<td>Negligible</td>
<td>Following restoration the effect would be negligible</td>
</tr>
<tr>
<td>St Marys Church</td>
<td>8</td>
<td>Negligible</td>
<td>Negligible</td>
<td>-</td>
<td>High Sensitive receptor</td>
</tr>
<tr>
<td>Sunnyside / Highfield Farm</td>
<td>9</td>
<td>Moderate</td>
<td>Medium low</td>
<td>Medium low neglible</td>
<td>Sensitive receptor</td>
</tr>
<tr>
<td>Church Farm</td>
<td>10</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Negligible</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Rating</td>
<td>Periphery</td>
<td>Hedgerow</td>
<td>Mound</td>
<td>Vegetation and Topography</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>------------</td>
<td>----------</td>
<td>-------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Hardley Hall</td>
<td>11</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Negligible</td>
<td></td>
</tr>
<tr>
<td>Beacon Farm</td>
<td>12</td>
<td>Moderate</td>
<td>Medium high</td>
<td>Medium low</td>
<td>Sensitive receptor</td>
</tr>
<tr>
<td>Hill House</td>
<td>13</td>
<td>Slight</td>
<td>Medium low</td>
<td>Medium low</td>
<td>Upper property views</td>
</tr>
<tr>
<td>Raveningham Park</td>
<td>14-16</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Due to vegetation and topography</td>
</tr>
<tr>
<td>Boundary House Farm</td>
<td>17</td>
<td>Slight</td>
<td>Medium low</td>
<td>Negligible</td>
<td></td>
</tr>
</tbody>
</table>

**Conclusion**

3.21 It is concluded that subject to a phased mineral extraction, maintenance of periphery existing planting and hedgerow, screening mounds and progressive restoration the proposed mineral extraction could be accommodated at Norton Subcourse with a medium to low significance impact. It is demonstrated that the proposed extraction areas should not have a visual impact on the wider landscape character.

**Tree Survey, Arboricultural Implications Assessment and Method Statement**

3.22 As part of the proposed development the Company propose to remove mature oaks from the area to the south and north east. Cemex has commissioned Landscape Partnership to undertake an Arboricultural assessment.

3.23 The trees were inspected from ground level and measurements taken in accordance with the recommendations in British Standards 5837 2005. Canopy spreads have been measured and plotted including tree protection areas as illustrated on plan N10617-TS01.

3.24 The surveyed trees play an important role in the character of the site and provide an important softening screen. The younger trees surveyed form the screening belt and are contemporary. The mature trees are linked to previous agricultural workings field.
boundaries and provide amenity importance to the local landscape. The trees on site can be described as follows;

Character group one – Mature trees growing within the site (field boundary planting)

Character group two – Tree planted within the last 20 years which form screening belts

3.25 The Arboricultural Survey in Appendix 3 categorises all trees on site of those trees surveyed it is proposed that T34 and T35 be removed to enable extraction in the north eastern phase and trees T4-12 within the southern phase. Cemex shall seek to retain as many mature trees as possible.

Table 3.2 Summary of Trees to be felled.

<table>
<thead>
<tr>
<th>Tree No.</th>
<th>Species</th>
<th>Height (m)</th>
<th>DBH (mm)</th>
<th>N</th>
<th>E</th>
<th>S</th>
<th>W</th>
<th>Stems</th>
<th>Height of clearance</th>
<th>Age class</th>
<th>Physiological condition problems/comm. items</th>
<th>Structural condition</th>
<th>Preliminary management recommendations</th>
<th>Est. remain years</th>
</tr>
</thead>
<tbody>
<tr>
<td>T34</td>
<td>Quercus robur</td>
<td>11</td>
<td>600</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>OM</td>
<td>Good, some cavities in branches, some dead wood</td>
<td>None</td>
<td>40+</td>
<td>B1</td>
</tr>
<tr>
<td>T35</td>
<td>Quercus robur</td>
<td>13</td>
<td>600</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>M</td>
<td>Good, some dead wood</td>
<td>None</td>
<td>20-40</td>
<td>B1</td>
</tr>
<tr>
<td>T4</td>
<td>Quercus robur</td>
<td>14</td>
<td>600</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>M</td>
<td>Good, some basel damage, minor significance</td>
<td>None</td>
<td>40+</td>
<td>B3</td>
</tr>
<tr>
<td>T5</td>
<td>Quercus robur</td>
<td>12</td>
<td>600</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>M</td>
<td>Fair, significant canopy die back, Good, old pollard</td>
<td>None</td>
<td>40+</td>
<td>B2</td>
</tr>
</tbody>
</table>
3.26 Where trees are to be retained an excavation standoff shall be identified to avoid root damage. The root protection areas have been identified on plan ref N10617-TS02 which will be fenced with post and wire. It is proposed that all operations shall take place outside the RPA.

3.27 It is noted that the removal of any significant oak tree within the extraction area would have an impact on the local landscape; the Company has selected limited trees for felling from the north east and southern extraction area.
3.28 The Company propose to replace any oaks removed as part of the proposed restoration concept and where appropriate new hedgerow which will ensure the long term landscape character similar to the existing agriculture, hedgerow and oak field boundaries around Norton Subcourse.

3.29 It is considered there shall be a short to medium term impact by the removal of some of the mature oak within phase 11-13 and 14-15. The remaining oaks will provide links to the historic landscape and shall be complemented by the proposed restoration scheme and future planting which will reclaim the long term character. The proposed phasing and retention of periphery trees reduces the significant impact and adhere to planning policy DM8.
4.0 HYDROLOGY AND HYDROGEOLOGY

4.1 The Environmental Impact Assessment Directive (85/337/EEC) states that the direct and indirect effects of development should be assessed in terms of their impact on specific factors. Based on the factors identified in Article 3 of the EIA regulations, the direct and indirect effects of the proposal on water have been assessed. Also the interaction that the impact upon the water environment may have upon human beings, flora and fauna will also need to be assessed. An assessment of the potential hydrological and hydrogeological impacts of the proposed development has been undertaken by Cemex Principle Hydrogeologist and a copy of his report is reproduced in Appendix 4.

Baseline conditions

4.2 Norton Subcourse quarry is located approximately 1km north west of the village of Norton Subcourse in Norfolk. The following three extension areas are proposed for development, north west, north east and southern area. The ground surface is undulating and slopes to the north from approximately 19m AOD to 15m AOD in the North West area and approximately 17m AOD to 8m AOD in the north east area. The south area slopes from approximately 21m AOD in the north east to 9m AOD in the southwest.

Hydrology

4.3 Using data collect from the River Yare a very approximate estimate of mean rainfall can be calculated on the combined catch area of 21ha of the three extension area of 1.3l/s.

Surface water features and drains

4.4 The site is positioned above the flanks to the valley associated with the River Chet a tributary of the east flowing River Yare. The floor of the River Chet and Yare valleys is very flat and natural drainage is poor with the result that drains have been cut to render the area suitable for agriculture. Drains to the north of the proposed extraction area flow to Boyce’s Dyke which joins the Yare 1.3km to the north. The River Chet and Yare have flood protection banks.
4.5 Water level within the restored lake on site is recorded at 7.28m AOD which is within the range of the ground water levels recorded in the drift deposit. There are no other waterbodies, watercourses or significant drains within the site or in the area between the site and Low Road to the north. Limited evidence of runoff on the site suggests a significant proportion of rainfall infiltrates the ground.

Flood Risk
4.6 The site lies outside the flood zone 2 as shown on the Environment Agency’s indicative flood plain map.

Surface Water Quality
4.7 Water samples from Hardley Flood located to the west of the north western proposed extraction area collected between the periods of 2007-2010 show a chloride concentration that exceeds 1,000mg/l under low flow conditions presumably due to tidal influences.

Hydrogeology
4.8 Aquifer classification includes chalk as a principle aquifer and the sand and gravels being a secondary aquifer with permeable layers capable of supporting water supplies at a local rather than strategic level.

4.9 Ground water at Norton Subcourse Quarry has been an average of 8m AOD with strikes levels ranging from 5-9m AOD. Strike levels in the southern extension are generally in the range of 12-14m AOD.

4.10 Ground water flows show the highest ground water levels located near the silt lagoons and plant site area. Ground water is likely to be recharged locally from rainfall but it is possible that leakage from the lagoons has resulted in the localised ground water mound. Since there appears to be very limited runoff from the site a large proportion of the effective rainfall is likely to contribute to recharge of the aquifer. The main flow direction of groundwater is considered to be north eastwards with discharge in Norton Marshes and associated drains to the north east and ultimately the River Yare.
4.11 Ground water quality exceeded the maximum ammoniacal nitrogen, iron, potassium nitrate and nitrite for drinking water from the data provided by the Environment Agency at surrounding monitoring points.

Discharge Consent

4.12 There are various discharge consent within in the vicinity 6 of which are within 3km.

Landfill

4.13 There are no landfills located within 3km of the site.

Potential receptors

4.14 To the west of the Chet is the Hardley Flood SSSI, a surface water body. Given the proximity of the lake to the Chet and its location within the peat associated with the river valley it is likely that this feature is supported by groundwater and overbank flows from the Chet.

Abstraction

4.15 There are ten licensed abstractions within a 3km radius of the site. Cemex holds a license to abstract 90,900m³/a, 900m³/d and 45m³/h from a borehole for mineral washing. Quantities abstracted are monitored by a flow meter and are illustrated in table 12 within the Hydrological Assessment Appendix 4.

Proposed Development

4.16 There will be a minimum standoff of 0.5m above the base of excavation to the highest recorded water table for each phased area corresponding to the levels in table 14 within the Hydrological Assessment Appendix 4. The existing processing plant and water management system shall be used for future extraction. The quarry borehole abstracts water and discharges into an adjacent lagoon which supplies the washing plant. The washed water is recycled via a series of lagoons. The quarry does not currently directly discharge any water to ground or surface water and does not anticipate doing so for the foreseeable future. All waters generated on site arising from wheel washing and mineral processing is directed to the settlement lagoon on site.
4.17 Restoration of the site is low level to heathland and agriculture and shall include small mires at level of approximately 8.5m AOD.

Assessment of potential impacts and the proposed development

4.18 The following potential impacts are identified

- Removal of unsaturated zone leading to changes in ground water levels and flows
- Ground water quality issues related to the above
- Increase runoff from the site leading to potential flooding due to the removal of the unsaturated zone.

The following potential receptors have been identified;

- Water abstraction from the drift deposits and groundwater – dependant surface water bodies;
- Hardley Flood SSSI, SAC, SPA and Ramsar Site
- Broads National Park
- Spring and water course
- The River Chet and Yare and associated dykes and drains and the Beck
- The groundwater-fed lake at Norton Subcourse

4.19 Mitigation measures

- All working remaining above 0.5m above the highest water table per area
- Progressive restoration to limit mineral void to groundwater pollution
- No dewatering
- Limited extraction depth (above ground water)
- No additional hard standing reducing surface water run off
- Monitoring of ground water levels
- Measures to prevent chemical pollution
- Continuation of existing water management system
Conclusion

4.20 It is considered with the implementation of the above mitigation measure and monitoring as stated within the Hydrological Assessment Appendix 4 there shall not have an adverse impact upon the local groundwater level, quality or flows therefore reducing any adverse impacts on the surrounding hydrology.
5.0 **NOISE**

5.1 The Environmental Impact Assessment Directive (85/337/EEC) states that the direct and indirect effects of development should be assessed in terms of their impact on specific factors. Based on the factors identified in Article 3 of the EIA regulations, noise has the potential to impact human beings and fauna.

5.2 The proposed extraction and restoration at the application site will be similar to existing operations. The main operations associated with the extraction of sand and gravel and restoration of the application site which generates noise are as follows:-

(a) soil stripping/overburden stripping and bund formation for typically a total of six to eight weeks per year annually including the formation of soil storage

(b) extraction of sand and gravel with an excavator to dig material and a loading shovel to place into the dump trucks

(c) Transportation of extracted mineral to the processing plant site by dump trucks concurrent with extraction

(d) Procession of material at the processing plant with a loading shovel to place material into lorries for transportation from the site.

(e) shaping final restoration and spreading soils.

5.3 These operations are considered in the Noise Assessment Report which forms Appendix 5 to this Statement.

5.4 The noise assessment has taken into consideration the plant, machinery and vehicles related to operations to enable mineral extraction and restoration. Section 3.3 within the noise assessment clarifies the DB Lwa of the equipment which have been used in the calculations to predict noise impact and proposed noise levels.
Background Noise Levels

5.5. Background noise measurement was undertaken at locations around the proposed extension and existing site. The average background noise levels from four monitoring measurement locations in June 2010 were between 32 and 39dBA90, T, Free Field. Therefore the suggested noise limit for all other dwelling is 45 dB LAeq, 1 hour Free Field.

5.6. Noise levels without any mitigation measures would be as follows.

<table>
<thead>
<tr>
<th>Site Noise Calculation Location / Receiver</th>
<th>Noise Level dB LAeq, T</th>
<th>Noise Limit dB LAeq, T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beacon Farm</td>
<td>61</td>
<td>45</td>
</tr>
<tr>
<td>Hill House</td>
<td>58</td>
<td>45</td>
</tr>
<tr>
<td>Leys Farm Bungalow</td>
<td>47</td>
<td>45</td>
</tr>
<tr>
<td>Firs Farm</td>
<td>48</td>
<td>45</td>
</tr>
<tr>
<td>Carr Farm Cottages</td>
<td>47</td>
<td>45</td>
</tr>
<tr>
<td>Sunnyside</td>
<td>53</td>
<td>45</td>
</tr>
</tbody>
</table>

5.7 The proposed noise levels do not include mitigation measures and is on the presumption that all plant is operating simultaneously. Temporary operations shall continue at highest noise level of 70-dB LAeq 1 hour free field for a maximum period of 8 weeks within any calendar year.

5.8 With the introduction of existing barriers of dense foliage noise levels are reduced to as follows.

<table>
<thead>
<tr>
<th>Site Noise Calculation Location / Receiver</th>
<th>Noise Level dB LAeq, T</th>
<th>Noise Limit dB LAeq, T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beacon Farm</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Hill House</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Leys Farm Bungalow</td>
<td>41</td>
<td>45</td>
</tr>
<tr>
<td>Firs Farm</td>
<td>41</td>
<td>45</td>
</tr>
<tr>
<td>Carr Farm Cottages</td>
<td>41</td>
<td>45</td>
</tr>
<tr>
<td>Sunnyside</td>
<td>45</td>
<td>45</td>
</tr>
</tbody>
</table>
5.9 The following noise mitigation measures have been considered for this assessment and tested in the site calculations. Mitigation Measures include perimeter bunds namely 3m high bunds for Beacon Farm and 2m high bunds for Hill House and Sunnyside for work within the nearest extraction phases. The mobile screen, loading shovel and dump trucks, shall be positioned at 7 metres below existing ground levels for extraction at a distance of over 300m of Beacon Farm, Hill House and Sunnyside. The loading shovel and dump trucks need to be positioned 3.5 metres below existing ground levels for extraction within 200m of Beacon Farm, Hill House and Sunnyside at current perimeter bun heights or shall be classified as temporary operations.

5.10 It is recommended that noise limits be condition as stated in Section 6 of the noise assessment in addition to a condition regulating the hours of operation to 0700 – 18.00 Monday to Friday and 0700 – 13.00pm on Saturdays with no operations on Sunday, Bank Holiday and National Holidays.

**Noise Criteria**

5.11. As the proposed development is the extraction of sand and gravel and placement of soils for restoration the appropriate criteria for noise assessment is NPPF (Technical guidance) previously MPS 2 – “Controlling and Mitigating the Environmental Effects of Mineral Extraction in England”, which replaces Minerals Planning Guidance (MPG) 11, albeit the noise limits in both documents are essentially the same and PPG 24 Planning and Noise.

5.12. For ‘temporary operations’, which include site preparation, construction of earth screening bunds, bund removal and final restoration, a limit of 70 L_{Aeq} is recommended, with a maximum period of 8 weeks in any 12 month period for such operations at any one property.

5.13. The appropriate noise limit for day to day filling operations recommended by NPPF is 55 L_{Aeq}, unless the background noise level at the receptor is below 45 L_{A90}, when the
appropriate criterion limit in \( L_{Aeq} \) terms is set at 10 dB(A) above the background \( L_{A90} \) value.

**Noise Modelling**

5.14. Noise modelling is used to predict the noise impact of proposed development and is carried out by obtaining source noise levels for the significant proposed noise sources and calculating the noise for the relevant receptor locations taking into account distance from the source and any screening or additional attenuation from ground absorption.

5.15. PPG24 “Planning and Noise” advocates use of BS5228 “Noise and Vibrating Control on Construction Sites” for the prediction of noise for landfill and waste sites and it also advocates the use of MPG11, which has been superseded by MPS2 and now NPPF, for the assessment of noise from mineral sites. MPS2 referred to PPG24 which, as stated, advocates the use of BS5228 for the prediction of noise from mineral workings. BS5228 is an appropriate method for assessing the application proposals and is widely used as the standard document for the prediction of site noise levels since 1984.

5.16. It is common nowadays to use computer modelling software to carry out the necessary calculations with the defaults being set to apply the prediction method of BS5228. The location and height of the various sources and receptors are defined in the model, together with any intervening ground or barriers, and source noise levels and duration of activity assigned. This modelling technique has been used to calculate noise limits with and without mitigation as illustrated within the noise assessment.

**Noise Assessment**

5.17 The noise modelling has been undertaken taking into consideration different plant and activities on site and the results are presented in the report in Appendix 5. The appropriate noise assessment is based on the criteria set out in National Planning
Policy Framework of 70 $L_{A_{eq}}$ for temporary operations and 55 $L_{A_{eq}}$ for normal operations (or background + 10 dB(A) where the background is below 45 $L_{A_{eq}}$).

5.18. The appropriate noise criterion levels based on National Planning Policy Framework recommendations at the site are as follows:-

<table>
<thead>
<tr>
<th>Location</th>
<th>$dB\ L_{A_{eq}, T}$</th>
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<tbody>
<tr>
<td>Beacon Farm</td>
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<td>Hill House</td>
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<td>Leys Farm Bungalow</td>
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<td>Firs Farm</td>
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<td>Carr Farm Cottages</td>
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<td>Sunnyside</td>
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5.19. The activity associated with extraction and restoration of the application site will mainly take place well below the rim of the extraction face and shall be screened from the views from sensitive receptors and public highway.

**Noise – Conclusions and Mitigation Measures**

5.20 The Noise Assessment Report in Appendix 5 to this Statement shows that for the vast majority of the life of the extraction and restoration the noise levels from operations on site will be at or below the appropriate criterion limits and will not significantly affect the area. However, towards the end of the restoration, there will be a short period when the screening effect of the extraction edge is reduced or lost completely and at that stage noise levels will be above the appropriate criterion level for normal operations. However the work could still be completed well within the criterion level for temporary operations of 70 $L_{A_{eq}}$ and within a similar timescale.

5.21 To keep noise impact as low as possible on the site access road it is recommended that the speed of vehicles is limited, but without the use of noise producing speed humps. Good maintenance of the site road surface will also help reduce noise.

5.22 **Proposed noise scheme**
**NOISE MONITORING SCHEME**

**Noise monitoring frequency**
Noise monitoring shall be undertaken at each new extraction area at each noise monitoring location when mineral extraction is being undertaken and mineral processed.

**Noise monitoring locations and limits**

<table>
<thead>
<tr>
<th>Location</th>
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<td>Beacon Farm</td>
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<td>Sunnyside</td>
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</table>

**Noise monitoring method**
Monitoring equipment shall be calibrated and meteorological conditions should be adequate for sample noise monitoring.

The monitoring shall take place when site equipment is operating normally for over a period of 15min.

The duration of a sample period shall be 15min unless the site noise level is at or above the relevant site noise level agreed for that location in which event a full 1h free field sample shall be taken.

The survey shall exclude so far as possible extraneous noises such as passing traffic.

The measurements shall be carried out in accordance with provisions of BS4142:1997 (or as maybe subsequently amended) and the LA90, T noise levels shall be reported, together with the weather conditions and sources of audible noise.

**Reporting**
The noise survey shall be provided to the MPA within two month of survey. Should any noise levels be contravened further investigation shall be undertaken and is necessary further mitigation measures shall be sought.

Monitoring locations, frequency of sampling may be varied by agreement with the MPA.

**Complaints**
Should any noise complaints be received by the MPA or Cemex notification shall be given to either party. Further investigation shall be undertaken and if necessary further mitigation measures shall be implemented.
6.0 AIR QUALITY

6.1 The Environmental Impact Assessment Directive (85/337/EEC) states that the direct and indirect effects of development should be assessed in terms of their impact on specific factors. Based on the factors identified in Article 3 of the EIA regulations, dust has the potential to impact human beings, fauna and flora. The potential emissions to the atmosphere from extraction and restoration operations such as those proposed at the application site are associated with possible dust arising from three main sources:-

(i) dust emissions from large scale earth moving during soil and overburden stripping, bund formation and site preparation and restoration;
(ii) dust from extraction / unloading / tipping /placement of quarry waste; and
(iii) dust emissions from lorry movements along the haul roads.

Site Preparation

6.2 Stripping of soils to gain access to the underlying mineral will be required at the application site which will be transported into soil storage mounds or where possible directly placed. Prior to extraction all soils shall be stripped and placed into storage under appropriate soil handling conditions. The soil mounds shall be seeded within 6 months of placement to prevent erosion and the area as a dust source. Operations involving soil/overburden are only undertaken for a few weeks each year. In order to ensure that no adverse impact arises soil stripping and handling operation would not be carried out or would be suspended where dry conditions and wind speeds coincide to create the potential for dust to be carried off-site and impact sensitive properties.

Excavation Operations

6.3 The excavation involves the use of a 360 excavator and wheeled loading shovel. The proposed extraction material in nature is damp reducing dust nuisance. The sand and gravel will be directly placed on dumpers and transported via internal haul roads to the existing processing plant. Restoration via quarry waste will involve the placement of material at the base of the quarry void and will be followed by the spreading of soils for restoration purposes.
Lorry Movements

6.4 A single dump truck will be used to transport unprocessed mineral to the fixed processing plant while road going lorries will collect the final sand and gravel products using the main cross country haul road to enter and exit the site. The dump truck will predominantly be situated within the excavation thus dust should not be a problem. The road going lorries will travel along a compacted hoggin-surfaced access road where there is potential for dust to be raised if vehicles travel at speed albeit there are no residential properties alongside the road. However, a speed limit exists on the road and a water tanker is used during periods of dry weather to ensure that the road surface is kept in a damp condition.

6.5 The majority of the road going vehicles have sheeted or covered loads when departing from the site. All haul roads shall be dampened as and when necessary to prevent dust particles.

6.6 The degree to which significant dust emissions that are capable of causing nuisance can arise from a particular site depends upon various factors, including:

(a) Time of year and climatic conditions, with dry conditions and high wind speeds being conducive to dust generation.

(b) Particle size distribution, with smaller, drier particles capable of entrainment at a lower threshold velocity. Most soils form aggregates which are too large to be entrained.

(c) Surface characteristics, with vegetation cover making material in bunds less susceptible to entrainment.

(d) Working methods, particularly vehicle movements, are capable of causing dust if not controlled.
(e) The proximity of environmentally sensitive receptors.

(f) The provision of control measures, aimed at alleviating the impact.

Mitigation Measures – Dust Control

6.7. A number of possible sources of dust have been identified which, in the absence of any remedial measures, have potential to give rise to dust nuisance. The following remedial measures are dust control procedures that will be operated at the site.

6.8. Sand and Gravel and soils are normally generated during periods of dry weather in combination with windy conditions. The focus of the dust management strategy is to control dust generation and movement at source and the main sources of dust at the site are likely to be from the internal haul roads during periods of dry weather. Deposition of individual loads of material is considered to be less significant in terms of potential for dust generation.

6.9. The following dust control measures will be implemented and maintained throughout the operational life of the application site, with the objective of preventing or minimising the release of airborne dusts, fibres and particulates arising from the backfilling operations in such quantities or concentrations that are likely to cause pollution of the environment or harm to human health.

General

- A high standard of housekeeping shall be maintained at all times
- All operatives receive formal training and instruction in relation to the control of the process and emissions to air.

Soil Movements

- Soil movements will be restricted to low meteorological periods
- Vehicle speeds will be limited
6.10. The site manager will exercise day to day control over the site at all times and will have particular responsibility for securing full compliance with the conditions attached to the planning permission. Specifically he will assume control, either personally or by delegation to responsible staff, of -

(a) vehicle movements,

(b) all sand and gravel loading, tipping and extraction / restoration,

(c) the operation of dust suppression measures and

(d) inspection, cleaning and maintenance of all plant and equipment.
6.11. All staff will receive the necessary training relating to control of operations and potential sources of dust emission, including in particular, plant malfunctions and abnormal conditions. Staff will report any visible dust emissions to the site manager. The continuing effectiveness of the dust management scheme will be regularly reviewed.

6.12. Monitoring of dust will involve visual inspections of the extraction area, access roads and haul roads by the site manager or his deputy at least twice during each working day, with the details, results and weather conditions being recorded in a site log book. Dust suppression measures will be implanted to ensure that no visible dust leaves the site.

6.13. The focus of the dust control strategy will be to control dust generation and movement at source and therefore no receptor-specific dust monitoring is proposed. A dust management scheme will be in place to deal with any significant release of dust or particulates outside the site boundary and there will be a complaints procedure in operation to deal with any complaints by local residents, with a register of complaints kept on site to record all concerns expressed either directly to the site or via regulatory authorities. Each complaint will be investigated and the action taken recorded and the minerals planning authority will be advised in writing within two weeks of any dust complaint received, together with the findings of the investigation and corrective action taken.

Soil Movements

6.14. Soil stripping has to be undertaken when soils are dry and friable but shall not be moved in extreme weather conditions that could cause dust nuisance. When necessary, the working areas will be sprayed with water to suppress dust using a bowser, although such applications will be controlled.

6.15. Towards the later stages of the restoration, in the higher areas within the quarry, there is increased potential for fugitive dust emissions to escape from the area.
However, the progressive nature of the restoration work will ensure that the operational area will be confined to relatively limited area. This will ensure that the potential for dust arisings will be reduced and that dust management controls can be focussed and concentrate on specific areas.

6.16. The control measures could include the construction of temporary bunds around specific landfill areas, if considered appropriate. In unusually dry or windy conditions, material handling would be suspended if it appeared likely that dust could be carried towards any sensitive receptors.

Vehicle Movements

6.17 Within the site internal movements will be restricted to clearly delineated routes, generally on a prepared surface and at low level wherever possible. The haul routes will be compacted, graded and maintained to provide a smooth running surface and will be designed to avoid sharp changes in gradient or alignment.

6.18. Temporary haul roads will be maintained in good condition and kept free from mud by regular grading, good drainage and use of hardcore as necessary. In dry weather, when necessary, a water bowser will be used to dampen the surface of haul roads and suppress dust where necessary on haul roads.

6.19. All site vehicles will be maintained in accordance with manufacturer’s specification and will be fitted with upswept exhausts and radiator cowls. Site haulage speeds will be controlled in order to minimise possible dust entrainment and appropriate instructions will be issued to all drivers.

6.20 The site entrance and access road will be inspected daily to check whether they are clean and tidy and a road sweeping vehicle will be ordered as soon as possible if an inspection indicates mud levels are unacceptable. Movement of vehicles on or off
site may be restricted as necessary and additional inspections will be carried out in response to complaints or following particularly heavy rainfall.

**Air and Climatic Factors**

6.21. Norton Subsource Quarry does not lie with any of the Local Air Quality Management Areas. South Norfolk 2000 Local Air Quality Management assessment and 2011 Air Quality Progress Report confirm that there are no areas of concern with regard to dust concentrations around the quarry and ambient particulate air quality standards are predicted to continue being in compliance with the UK Air Quality Standards.

Emissions to Air

6.22. Dusts, fibres and particulates are found in sand and gravel and soils which are normally generated during periods of dry weather in combination with windy conditions. The focus of the dust management strategy is to control dust generation and movement at source. The main sources of dust at the site are likely to be from movements along the internal haul road.

6.23. The measures that are to be implemented and maintained throughout the operational life of the site are stated below. The objective of the measures will be to prevent and minimise the release of airborne dust, fibres and particulates arising from extraction and restoration.

6.24. There will be some exhaust emission from the bulldozer operating at the site and the dumper trucks moving raw material, which will all have diesel engines. However, the machine and vehicles will all be fitted with exhaust equipment in accordance with legislation under EC Directives.

6.25. The mitigation measures proposed in relation to dust control from operations at the site were described above and involve a dust management scheme focussed on control of dust generation and movement at source. Specific measures comprise:
(i) Sheeting of lorries
(ii) Internal haul routes to be defined, with prepared surface and to be dampened as necessary
(iii) Upswept exhausts on site vehicles
(iv) Dampening of surface of filling areas when necessary
(v) Suspension of operations in extreme windy conditions
(vi) Bunding, as needed
(vii) Progressive restoration

6.26 These measures, together with a dust monitoring scheme and management procedure for dust control will ensure that the extraction operation could be established and operated in a manner which would eliminate any impact from dust on the surrounding environment or adverse effect on local amenity.
7.0 ARCHAEOLOGY

7.1 The Environmental Impact Assessment Directive (85/337/EEC) states that the direct and indirect effects of development should be assessed in terms of their impact on specific factors. Based on the factors identified in Article 3 of the EIA regulations, the direct and indirect effects of the proposal on material assets and the cultural heritage have been assessed in accordance with DM9. The Guildhouse Consultancy, a copy of whose report is reproduced in Volume 2, Appendix 7, has carried out a desk-based assessment of archaeological and historic features.

Existing Situation

7.2 A desk based study of the three parcels of land at Norton Subcourse has been undertaken to determine what, if any, evidence exists of archaeological features within and around the site. Those sources included the County Sites and Monuments Record, the Local Studies Library and the County Record Office and include maps dating back to 1574.

7.3 This work has established the following:

(i) There are no Scheduled Ancient Monuments within or adjacent to the site;
(ii) There are no formally designated archaeological sites or historic features within or immediately adjacent to the site;
(iii) There are no listed buildings or conservation areas within or adjacent to the site; and
(iv) The Site and Monuments Record shows a number of entries relating to the site which include pottery fragments, flint flakes, and architectural fragments. A number of linear features were also identified which are thought to be old field boundaries and geological features.

7.4 Land immediately adjacent to the site and further afield has also produced a range of finds including two coin hoards, flints, pottery shards and domestic items. Further linear features are also apparent from aerial photographs.
7.5 Known Archaeology within the Proposed Development to the North East including the following:

- Cropmarks of an undated road – Medieval to Post Medieval
- Find spot – Medieval to Modern
- Iron age and Medieval Activity at Norton Subcourse current extension – Iron Age, Late Saxon – Medieval
- Cropmarks of a probable Iron Age to Roman Trackway and Field System – Roman

7.6 Known archaeology within the Proposed Development Area to the South

- Post medieval Beacon stance and Roman Coin Hoard – Post Medieval
- Multi period finds – Post Medieval
- Undated cropmarks of uncertain archaeological significance – Modern

7.7 Known archaeology within the Proposed Development Area to the North East

- Iron age Iceni coin – Iron age
- Cropmarks of undated enclosures, trackways and linear ditches - unknown
- Cropmarks of undated linear ditches probably field boundaries - Undated

Potential for Archaeology

7.8 Both topographically and in terms of soil characteristics the site has been classified as ‘favourable’ so far as archaeological potential is concerned.

7.9 For the different archaeological periods a summary assessment of archaeological potential has been undertaken based on the desk assessment as follows:

- **Palaeolithic:** ‘In-situ sites – Very Low; Redeposited material – Low Potential
- **Mesolithic:** Low Potential
- **Neolithic/Bronze:** Major Sites – Low; Minor Sites – Low/Medium Potential
- **Iron Age:** PDAN significant sites – Medium; minor sites – Medium – high
- **Roman:** PDAN significant sites – Medium; minor sites – Medium – high
- **Early Saxon:** Very Low Potential
- **Mid-Saxon:** PDAN Low Potential, PDAS Low- Medium
- **Late-Saxon/Early Medieval:** Major Sites – Very Low Potential
7.10 In addition the potential for environmental remains has been noted as ‘low’.

7.11 On the available evidence the principal potential for archaeological remains being present is seen as the Roman Period.

Assessment of Effects

7.12 The removal of the soil horizon and excavation of the sand and gravel will result in the unavoidable loss of the identified features, except where margins are to be retained. Were this to occur without any means of assessment and excavation/recording then any archaeological resources would be lost completely. There is, therefore, a need to have a mitigation strategy in place prior to operations commencing.

7.13 As the quarry is not to be dewatered therefore any risk to waterlogged archaeological remains is avoided.

Mitigation Measures

7.14 The following mitigation strategy is proposed.

Proposed southern and north east areas

- Field survey – metal detector survey and field walking

Proposed development area North East and South

- Selected trial trenching based on field survey
- Preservation in situ of major significance on the margins of the PDA
- Preservation by record (Set piece excavation in advance of development. Preservation by record of identified sites of major significance by set piece excavation in advance of development and by continuous observation of topsoil and (if necessary) upper subsoil stripping, with an excavation and
recording requirement. Low-Level Watching Brief; i.e. intermittent observation of mineral section to check for Palaeolithic material, with an excavation and recording requirement. Mineral monitoring by low level watching brief to check Paleolithic material with excavation and recording requirement)

- Archive consolidation, interim assessment and reporting
- Analysis and publication of results
- Archive Deposition

Conclusion

7.15 It is proposed that this mitigation strategy be formally secured by an appropriate condition attached to the planning permission thus ensuring that any archaeological features are properly identified and recorded. The desk based assessment concludes there would be no adverse affect heritage significance assets or their setting nor are there any areas presumed to be preserved in situ and preservation by records would be appropriate in this instance as required by policy DM9.
8.0 TRANSPORT AND ACCESS

8.1 The Environmental Impact Assessment Directive (85/337/EEC) states that the direct and indirect effects of development should be assessed in terms of their impact on specific factors. Based on the factors identified in Article 3 of the EIA regulations, transportation and traffic has the potential to impact human beings, flora and fauna. The impact on air quality and climate will also need to be assessed in accordance with DM10.

8.2 Access to the site shall continue to be via an internal haul road through fields between Yarmouth Road and Loddon Road to Norton Subcourse Quarry plant site. Only vehicles related to Norton Subcourse Quarry shall use this internal haul road. There will be internal use of the access haul road for dumper trucks during extraction of phase 11-13 to the south.

8.3. The existing quarry access is via a junction connecting to Ferry Road prior to the main Ferry Road Yarmouth Road (B1136). The entrance is approximately 5m wide without footpaths and appropriate visibility splays. Ferry Road is a C classified road subject to 60mph speed limit. Ferry Road links to the B1136 and A146 is a linked to the A143 (approx 1.5km) which is part of a principle highway network. Access improvements have been proposed to enable temporary parking near the entrance.

8.4. The access has been designed to accommodate HGV vehicles ancillary to mineral operations at Norton Subcourse Quarry.

Existing Quarry Traffic

8.5 The existing quarrying operation generates an average of 46 lorry movements (23 loads) per day feeding on to the B1136. Some 85% of these movements arrive and depart in the direction of Hales and the A146 while the remaining 15% travel to and from the A143 to the east. Vehicle movements over the last 3y have been lower than normal. Historically high levels of extraction (200,000tpa) have been approximately 192 vehicles per week (384 movements per week).
8.6 With the exception of local deliveries of sand and gravel no Lorries associated with the quarry use Ferry Road beyond the quarry entrance.

Proposed Development

8.7. The proposed development shall not increase mineral production above historic levels of approximately 100 - 200,000tpa therefore the proposed extension areas will not generate any additional traffic using the local highway network, when compared with the previous site operations.

8.8. The site shall continue to implement vehicle safety controls relating to speed, segregation, manoeuvring, parking and access to the working areas, sheeting/containment, dampening of roads by water bowser, maintenance of surfaces and entry and exit via the weighbridge.

Traffic Issues

8.9 It is concluded that the quarry access arrangements and local highway network remains suitable to accommodate traffic associate with a continuation of quarrying activities for an additional 15-20y at which time all mineral resources shall have been exhausted and all operations shall have ceased. Since 2002, when the most recent consent was granted there have been no reported highway safety or capacity issues associated with quarry traffic using this route to access the wider highway network Ferry Road and Yarmouth Road are therefore considered suitable to accommodate traffic associated with a continuation of quarrying activities. The Junction with the A146 was deemed suitable by the Highway Authority in 2001.

8.10. The local highway authority has previously deemed the environmental network impact of 46 daily trips associated with the quarry to be acceptable for the local highway network. HCV movements are not predicted to increase as part of this proposal and therefore should remain acceptable.
8.11. The percentage increases in traffic flows on the local roads have been assessed two rules of thumb are given in the IEA Guidelines for use in an initial screening process

- Rule 1: include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)

- Rule 2: include any other specifically sensitive area where traffic flows have increased by 10% or more.

8.12. As noted in the EIA Guidelines, an increase in traffic flows of less than 10% is within normal day-to-day variation and should therefore be assumed to create no discernable impact on the traffic/road environment.

8.13 The proposed development does not equate to any percentage increase in vehicle movements.

Conclusions on impact of road traffic

8.14. Since the development will not result in additional traffic using local highways or the wider network, it will not be necessary to change the current access and management arrangements for Norton Subcourse.

8.15 As the development will not result in additional traffic using Ferry Road or Yarmouth Road and allowing for growth in background traffic levels until mineral extraction ceased it is hoped this route will remain within its design capacity.

Assessment of Effects

8.16 No change to the historic annual output of sand and gravel from the quarry is planned, thus the average number of lorries arriving at and departing from the quarry will remain unchanged.
8.17 Likewise, no significant change to the market served by the quarry is anticipated therefore there will be no change to the routing of lorries with vehicles continuing to avoid the Loddon and Ferry Roads north of the entrance.

8.18 In conclusion the proposed development will not alter the status quo in terms of lorry movements to and from the quarry. These movements have not, to the Applicant’s knowledge, caused any unacceptable adverse impacts upon road users or the amenities in the locality.

8.19 Over all it is considered the current arrangements for traffic associated with Norton Subcourse Quarry remain suitable for the continuation of sand and gravel extraction proposed in accordance with DM10.
9.0 SOIL AND AGRICULTURAL LAND CLASSIFICATION (APPENDIX 8)

9.1 The Environmental Impact Assessment Directive (85/337/EEC) states that the direct and indirect effects of development should be assessed in terms of their impact on specific factors. Based on the factors identified in Article 3 of the EIA regulations, the direct and indirect effects upon the soil environment may have upon the flora and fauna and the loss of agricultural land upon human beings will also be assessed in accordance with DM16. A soil and agricultural land classification report was commissioned to confirm the site land classification and pre-working physical condition of the agricultural field.

9.2 A survey was undertaken on site on the April 2010, the survey was split into the three parcels of land, North West, North East and South West.

North West

9.3 This piece of land covers approximately 4 hectares which included 5 auger borings made with a 1.2m dutch hand augur at or close to locations 100m apart as determined by the OS grid. The survey was undertaken by Dr S G McRae.

9.4 The proposed extension is a small arable field in stubble when inspected in 2007 and cereal in 2010. There are no direct climatic limitations but high moisture deficits which build up during summer indicate that this climatically very dry area with droughtiness and likely to be a significant agricultural limitation. The main soil type is Soil Type A – slightly stony sand soils over sand and SoilType B – Moderately stony soils over gravel.

9.4 Soil type A the topsoil is up to 35cm thick and usually a dark brown medium sandy loam and with no more than about 5% stones. Soil Type B is stonier, especially at depth and all the profiles become impenetrably stony at between about 40 and 55cm from the surface. Soil Type B is also up to about 35cm thick but with a slightly higher stone content of 15-20%. The extension area is classified as agricultural land classification subgrade 3b.
9.5 There is an average thickness of 35cm of topsoil soils types A and B. and an average depth of 20cm of subsoil Soil Type A, no subsoil related to Soil Type B.

9.6 It is recommended with quantity of soils on site that the restoration profile provides 35cm topsoil and up to 40cm of subsoil (including waste sands) over sand.

South West
9.7 This piece of land covers approximately 9 hectares which included 13 auger borings made with a 1.2m dutch hand augur at or close to locations 100m apart as determined by the OS grid. The survey was undertaken by Dr S G McRae.

9.8 The proposed extension is two small arable field in cereal in 2010. There are no direct climatic limitations but high moisture deficits which build up during summer indicate that this climatically very dry area with droughtiness and likely to be a significant agricultural limitation. The main soil type is Soil Type A – slightly stony sand soils over sand

9.9 Soil type A the topsoil is up to 35cm thick and usually a dark brown medium sandy loam and with no more than about 5% stones. The extension area is classified as agricultural land classification undifferentiated Grade 3 (sub grade 3b)

9.10 There is an average thickness of 30cm of topsoil, soils types A and an average depth of 25cm of subsoil Soil Type A

9.11 It is recommended with quantity of soils on site that the restoration profile provides 30cm topsoil and up to 25cm of subsoil (including waste sands) over sand.

North East
9.12 This piece of land covers approximately 8 hectares which included 12 auger borings made with a 1.2m dutch hand augur at or close to locations 100m apart as determined by the OS grid. The survey was undertaken by Dr S G McRae.
9.13 The proposed extension is a small arable field. There are no direct climatic limitations but high moisture deficits which build up during summer indicate that this climatically very dry area with droughtiness and likely to be a significant agricultural limitation. The main soil type is Soil Type A – slightly stony sand soils over sand and Soil Type B – Moderately stony soils over gravel.

9.14 Soil type A the topsoil is up to 35cm thick and usually a dark brown medium sandy loam and with no more than about 5-10% stones no subsoil. Soil Type B is stonier, than Soil Type A especially at depths of 35 and 65 cm from the surface. Soil Type B is also up to about 35cm thick but with a higher stone content of 15-20%. The extension area is classified as agricultural land classification subgrade 3b and grade 4.

9.15 There is an average thickness of 30cm of topsoil, soils types A and an average depth of 25cm of subsoil Soil Type A

9.16 It is recommended with quantity of soils on site that the restoration profile provides 35cm topsoil no subsoil it is recommended quarry waste sands be used as subsoil forming material.

Conclusion

9.17 All soils shall be retained on site for restoration and directly placed or stored in periphery soil mounds. Soils shall be stripped as recommended this stripping all topsoil as a single unit from the areas of A and B, stripping loamy subsoil where present and stopping when pure sand is reached and if necessary to expose commercially workable gravels, strip any sandy or gravelly material below the loamy subsoil on Soil Types A or beneath the topsoil of Soil Type b and use as general fill, not as a soil resource.

9.18 Restoration profiles will replicate the original profile where possible and quarry waste shall be used as a subsoil forming material to assist restoration. Agricultural land classifications shall remain between sub grade 3 and 4.
10.0 CUMULATIVE IMPACT

10.1 This section of the Environmental Statement assesses the potential cumulative impact of the proposed development. An assessment is made of the impacts upon existing mineral extraction in addition to sensitive receptors in accordance with DM15.

10.2 The assessment of cumulative impact is required as part of an ES under schedule 4 of the Environmental Impact Assessment (EIA) Regulations 2011. There are no mineral sites located within 5km search of the proposed extension for sand and gravel extraction operation.

10.3 In terms of the cumulative impact upon communities the key urban area is Norton Subcourse Village and surrounding individual properties. These properties are therefore identified as a potentially sensitive receptor to cumulative impact arising from the proposed extension area at Norton Subcourse Quarry.

10.4 Specific sensitive receptors are also identified throughout the Environment Statement at the following:

- Beacon Farm
- Hill House
- Leys Farm Bungalow
- Firs Farm
- Carr Farm Cottages
- Sunnyside

10.5 Norfolk Core Strategy makes reference to potential cumulative impact specifically within policy DM15 which states;

Development Management Policy DM15 – Cumulative Impacts

Where a proposed mineral extraction site, or waste management facility is considered acceptable (in its own right) but the cumulative impact of a proposal in conjunction with other existing permitted or allocated mineral extraction sites and/ or waste management facilities in the proximity, is considered unacceptable the proposal may
be considered acceptable if phased so that one site follows the completion of the other or it can be demonstrated that the adverse cumulative impact can be adequately mitigated.

Planning application must therefore be supported by information demonstrating how proposals related to other development nearby and details of how any cumulative effects are proposed to be mitigated satisfactorily.

10.6 Cumulative impacts are impacts that result from changes caused by other past, present or reasonable foreseeable action, together with those directly attributable to the project. These guidelines detail the assessment of cumulative impact under two different definitions;

Incremental

Incremental impacts in that which occur when one type of impact from a development occurs at the same time as another impact from a separate development.

Combined

Combined impact relates to different kinds of impact caused by one development at on particular location.

10.7 This section summaries the likely cumulative impacts of the proposed development in relation to sensitive receptors and existing mineral extraction.

<table>
<thead>
<tr>
<th>Table 10.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of Incremental impact</td>
</tr>
<tr>
<td>Potential impact</td>
</tr>
<tr>
<td>Transport</td>
</tr>
<tr>
<td>Environment</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>Flora and Fauna</td>
</tr>
<tr>
<td>Landscape and Visual Impact</td>
</tr>
<tr>
<td>Noise</td>
</tr>
<tr>
<td>Air Quality</td>
</tr>
</tbody>
</table>
progressively worked and restored and the extraction areas are of some distance from sensitive receptors. The existing infrastructure shall not be altered or production increased therefore it is concluded there should not be any cumulative impact.

<table>
<thead>
<tr>
<th>Water Resources</th>
<th>Incremental</th>
<th>The extension areas shall not be dewatered reducing any impact upon water resources in the area. It is therefore considered due to the site not being dewatered and mitigation measures proposed there should be no cumulative impact upon ground water.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soils</td>
<td>Incremental</td>
<td>Three additional areas shall be disturbed via mineral working. All soils shall be stored within the individual areas. There shall be no overlap or interaction between soil resources therefore cumulative impacts are unlikely.</td>
</tr>
<tr>
<td>Archaeology</td>
<td>Incremental</td>
<td>All areas of Mineral Extraction at Norton Subcourse shall be subject to a WSI and the sequence will overlap. The investigation of archaeology on the proposed extension area would provide additional information and context to the final publications at Norton Subcourse therefore the cumulative impact would be minimal and may be described as positive.</td>
</tr>
</tbody>
</table>

**SUMMARY**

**Transport**

10.8 The proposed extension shall not increase vehicle movements only the duration of operations at Norton Subcourse Quarry through the proposed extraction and restoration.

**Flora and Fauna**
10.9 The proposed extension areas are of limited ecological value and would not provide a corridor to the existing site due to the intensity of agricultural working. The proposed restoration, increased margins and heathland should improve ecological habitats in the area and habitat corridors. The progressive nature of the mineral extraction should ensure there is not a cumulative impact upon flora and fauna.

Landscape and visual impact

10.10 The sensitive receptor to the south of the proposed extension areas are screened by advanced planting reducing any impact. Screening mounds shall continue to be placed to protect sensitive receptors in addition to existing planting. Cumulative impact may only be present to those properties along the periphery of the site at upper floor views although this will be limited due by screening, planting and progressive restoration.

Noise and Air Quality

10.11 As operations will be progressive and no additional equipment shall be purchased for the site it is not considered there shall be a cumulative impact. Good housekeeping and mitigation measures in the form of acoustic bunds (seeded) and dust suppression measures will ensure operational areas do not cause cumulative impact.

Water Resources

10.12 There shall be no dewatering on site therefore no cumulative impact.

Soil Resources

10.13 The incremental impact upon soil resources is not considered relevant as soil resources will remain separate. Soil resources shall be subject to high grade agricultural restoration and handling.

Archaeology
10.14 The potential impact upon features of cultural heritage importance, including the setting of such features, is considered unlikely to be subject to cumulative impact, as the impacts are generally site specific.

Combined Impact

10.15 The combined impacts of the proposed extension at Norton Subcourse upon local sensitive receptors has been summarised in table 10.2 in particular, transport, noise, air quality and visual impact;

<table>
<thead>
<tr>
<th>Sensitive Receptor</th>
<th>Noise</th>
<th>Air Quality</th>
<th>Transport</th>
<th>Visual</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beacon Farm</td>
<td>Limited impact</td>
<td>Potential for dust during soil stripping although due to distance and screening marginal</td>
<td>Not Applicable</td>
<td>Minor / Moderate</td>
<td>Limited impact</td>
</tr>
<tr>
<td>Hill House</td>
<td>Limited impact</td>
<td>Potential for dust during soil stripping although due to distance and screening</td>
<td>Not Applicable</td>
<td>Minor / Moderate</td>
<td>Limited impact</td>
</tr>
<tr>
<td>Location</td>
<td>Impact Type</td>
<td>Description</td>
<td>Screening Impact</td>
<td>Screening Type</td>
<td>Impact Type</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------</td>
<td>------------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Leys Farm Bungalow</td>
<td>Limited</td>
<td>Potential for dust during soil stripping although due to distance and screening impact marginal</td>
<td>Not Applicable</td>
<td>No Increase in vehicle movements</td>
<td>Minor / Moderate</td>
</tr>
<tr>
<td>Firs Farm</td>
<td>Limited</td>
<td>Potential for dust during soil stripping although due to distance and screening impact marginal</td>
<td>Not Applicable</td>
<td>No Increase in vehicle movements</td>
<td>Minor / Moderate</td>
</tr>
<tr>
<td>Carr Farm Cottages</td>
<td>Limited</td>
<td>Potential for dust during soil stripping although due to distance and screening impact marginal</td>
<td>Not Applicable</td>
<td>No Increase in vehicle movements</td>
<td>Minor / Moderate</td>
</tr>
<tr>
<td>Sunnyside</td>
<td>Limited</td>
<td>Potential for dust during</td>
<td>Not Applicable</td>
<td>Moderate</td>
<td>Limited impact</td>
</tr>
</tbody>
</table>
soil stripping although due to distance and screening impact marginal

| soil stripping although due to distance and screening impact marginal | No Increase in vehicle movements |

Summary of Combined Impacts

10.16 As the proposed extension areas are adjacent to the existing operation and within advanced screening belts the impact upon sensitive receptors is marginal.

10.17 The phased working pattern between the three extraction areas will reduce the impact upon noise and air quality and therefore not providing a combined or cumulative impact.

10.18 There shall be no increase in vehicle movement limiting any combined impact

10.19 It is considered with good environmental practice and mitigation measures there should be no cumulative impact upon sensitive receptors at Norton Subcourse Quarry.
PART THREE (C) – SUMMARY

1.0 CONCLUSION

This Environmental Statement has set out details of the application site and its physical and environmental characteristics, details of the proposed extension to Norton Subcourse Quarry with restoration to heathland and agriculture details of the relevant planning policy background. It has described the main environmental effects of the proposals, the mitigation measures proposed to deal with them and the likely effectiveness of the measures. From this work a number of main conclusions emerge:-

(a) Progressive working of extraction areas. The site production level shall remain at the same level of approximately 100-200,000tpa. Utilising the same production level limits reduces the impact upon the surrounding environment and maintains existing vehicle movements. The introduction of this extension area shall increase the life of mineral extraction at Norton Subcourse and enable the release of valuable reserves.

(b) The proposed restoration would be low level to heathland and agriculture offering opportunities for habitat creation that would enhance its visual appearance and landscape character and increase the nature conservation value of the sandpit site.

(c) The level of noise generated by the proposed development would for most of the life of the operations readily comply with criterion levels derived from the official recommendations in NPPF and the noise emissions would be within environmentally acceptable limits. At the final stages of the filling the normal criterion level would be exceeded for a very short period of time. However the operations could be completed well within the higher criterion level that is allowed for ‘temporary operations’ and within the permissible eight week time period allowed for such operations and a working method is proposed that would keep noise levels to the lowest practicable levels.
(d) The extraction of sand and gravel should have no significant environmental impacts in terms of dust or other emissions, traffic impact or effects on ecology, hydrology or groundwater.

(e) The proposed development is generally in accordance with the relevant development plan provisions and it is hoped a positive determination could be sought.

(f) The reclamation of mineral resources at this time would complement sustainable development principles of utilising existing infrastructure and mitigation measures.