

# Proposed Bourbles Quarry: on land off Bourbles Lane, Nr Preesall, Lancashire



## ENVIRONMENTAL STATEMENT

Planning Application to allow the extraction and processing of sand & gravel including the construction of new site access roads, landscaping and screening bunds, minerals washing plant and other associated infrastructure with restoration to leisure end-uses, agricultural land and biodiversity enhancement using Imported Inert Fill.

July 2023



THE BAXTER  
**GROUP**





## Quality Assurance Review

**Project Name:** ENVIRONMENTAL STATEMENT:

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## 1. INTRODUCTION

### 1.1 Background

1.1.1 On behalf of Baxter Construction Ltd (part of the Baxter Group), a planning application is being submitted for the extraction and processing of approximately 0.5 million tonnes of sand and gravel over 5 years with 2 years of restoration on completion of mineral extraction on land off Bourbles Lane, Lancashire, referenced as “Bourbles Quarry”. The restoration will require the importation of about 220,000m<sup>3</sup> of inert backfill to return the majority of the site to original levels for agricultural and restoration objectives.

1.1.2 Baxter Construction Ltd (BCL) is a Lancashire-based company that was established in 1990 and is part of the Baxter Group of companies. It is predominantly an independent, family-owned building and construction company based in Kirkham, Lancashire. The application area termed “the site” is partly owned by BCL but does comprise a number of separate landownerships where the rights to extract the minerals has been obtained by BCL and the restoration scheme approved by all parties.

1.1.3 The application includes proposals for the construction of a new access road into the quarry site off the B5720 Lancaster Road that joins the A588 only 200m to the east. The application also includes the development of landscaping and screening bunds, mineral processing plant and other associated quarry infrastructure together with a proposed restoration scheme for the site comprising pasture, arable, wetland and tourism end-uses. Although the proposed quarry development does not exceed 25 hectares, it is considered a “major development” thus an Environmental Statement is required as part of the planning submission.

1.1.4 This Environmental Statement (ES) has been prepared to report the findings of an Environmental Impact Assessment (EIA) undertaken to assess the environmental impact of the proposed quarry development and restoration, in accordance with the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations), and provides information that will be used by the Planning Authority and others to inform the process of determining the planning application.

### 1.2 Planning Context

1.2.1 The main planning policy points to note in regard to these proposals to extract sand and gravel at the proposed Bourbles Quarry are summarised in the paragraphs below.

- 1.2.2 The adopted mineral planning policy documents for Lancashire are out of date. In particular, aggregate supply policies in the Development Plan and the underpinning calculations are no longer justified or properly relevant, other than the general approach to planning to ensure adequate and steady supply of aggregates.
- 1.2.3 The adopted Wyre Local Plan is relatively up to date and clearly indicates a substantial amount of housing, employment and infrastructure that is being planned for delivery. Therefore, there will be a substantial local demand for aggregates including sand and gravel.
- 1.2.4 The National Planning Policy Framework (NPPF) 2021 and the Joint Lancashire Local Aggregates Assessment 2022, are critical in the determination of the planning application, largely because some of the most important areas of minerals policy (on aggregates) are well out of date, with no replacement in process at present. NPPF confirms that great weight should be given to benefits of mineral extraction and supply and emphasises the need to maintain an adequate and steady supply of aggregate minerals including sand and gravel.
- 1.2.5 Development management policies contained in the Development Plan require potential impacts to be carefully assessed, with the aim of ensuring that potential effects are properly managed and mitigated to ensure that potential impacts are kept to within acceptable levels. Such impacts can include effects on human beings and communities, effects on the environment, biodiversity and historic assets. The control and mitigation of these effects to within acceptable levels needs to be carefully assessed. Any residual negative effects need to then be weighed against the need and economic benefit of the development and its contribution to aggregate supply.
- 1.2.6 From an analysis of potentially relevant planning policy, of which there is a substantial body of material, the main policy tests for the various areas of assessment are contained within the Planning Statement.
- 1.2.7 The principal landowner of the proposed mineral development area currently operates a fishing lake angling enterprise "HyFly Fisheries", however the usage levels of the Fishery have, have diminished over recent years. This is principally due to the change in requirements and expectations of customers and the change in customer demographics. The current expanding trend for fishing establishments is for the additional provision of quality short stay holiday accommodation to accommodate fishing activities adjacent or within larger fishing lakes developments.



1.2.8 This proposed restoration scheme will therefore afford the opportunity to provide a small-scale lodge facility of 10 to 12 high quality lodges for use in conjunction with fishing holiday breaks. It should be noted that within the Borough and the County planning policies, there is support for diversification of the rural economy and to promote tourism. The proposed lodges development will add high quality tourism benefits to the local economy, albeit on a small scale.

### 1.3 Aims of the ES

1.3.1 The aims of the ES are to define the current situation at the application site and its near vicinity across a range of technical disciplines, describe the proposed working and restoration schemes, and assess the potential scope for impact and the need, where required, for mitigation measures.

1.3.2 Schedule 4 of the EIA Regulations 2017 indicates that the main objectives of the ES are:

- a) to identify and describe the existing environmental status (or baseline scenario) of the application site
- b) to describe the proposed development including the working methods and restoration provisions, taking account of the physical characteristics of the development, such as the size, scale and duration of various elements of the scheme
- c) consideration of potential alternatives
- d) to identify any significant environmental effects (including combined and cumulative effects) of the development and the measures which are proposed in order to avoid, prevent, reduce or if possible offset any identified environmental effects that may be perceived to be significantly adverse.

1.3.3 Specifically, the ES has addressed the main elements of the proposals that have the potential to impact (positively and/or negatively) on:

- Human beings
- Flora and fauna
- Soil, water, air and the landscape
- Interaction between the above
- Material assets and cultural heritage

#### 1.4 Scoping of the EIA

1.4.1 In accordance with the EIA Regulations, in June 2022 Greenfield Environmental submitted a request for a scoping opinion to Lancashire County Council (LCC) on behalf of the Applicant. The request outlined the methodologies anticipated to be employed in undertaking the EIA.

1.4.2 In August 2022 LCC provided a scoping opinion, which is presented in Appendix 1, along with a supplementary scoping letter, issued in November 2022. The scoping opinion sets out those matters considered by LCC, and the bodies it has consulted, to be of particular relevance and which need to be included within the Environmental Impact Assessment.

1.4.3 This is the most recent scoping opinion received from LCC. Minor changes have been made to the development proposals since the scoping request was submitted. These changes in part reflect the content of the LCC scoping opinion, however, adjustment and evolution of the proposals has also taken place as knowledge of the baseline conditions on site has developed and potential impacts have been identified and mitigated against.

1.4.4 The LCC scoping opinion highlighted the following key areas for consideration in the ES:

- Landscape and Visual Impact
- Noise
- Ecology
- Highways and traffic
- Water Environment
- Dust and Air Quality, including potential human health impacts
- Agricultural Land and Soils
- Slope stability and geotechnics

1.4.5 In addition to the aspects highlighted by LCC, the ES has also considered archaeology and historic environment.

#### 1.5 The EIA Team

1.5.1 Baxter Construction Ltd has appointed a project team to assist in the development of the Proposals and to prepare the ES. Details of the EIA team and their roles are provided below:

<b>Consultant</b>	<b>Role</b>
Greenfield Environmental	ES production Quarry Working Scheme, plant layout and phasing Restoration scheme Planning Policy review Geology, ground conditions, geotechnics and slope stability Public Rights of Way
Wardell Armstrong	Archaeology and Historic Environment
ReLandscape Ltd	Landscape and Visual Impact
Envirotech NW Ltd	Ecology, habitats and biodiversity
CFM Consultants Ltd	Restoration & Tourism
Bowland Tree Consultancy	Trees
Land Research Associates	Soils and Agricultural Land Quality
Hafren Water	Surface Water and Flood Risk Groundwater and Hydrogeology
Vibroek	Dust, Air Quality and Noise
Turner Lowe Associates	Highways and Transport

## 1.6 Structure of the ES

### 1.6.1 The ES comprises the following sections:

- Written Statement (with associated figures, plans and tables) – the ES
- Technical Appendices (Appendices 2-13)
- Non-Technical Summary (separate document)

1.6.2 An electronic version of the ES is available to download from Lancashire County Council's planning portal. The planning application and ES documents can also be purchased from Greenfield Environmental Ltd as a printed set for £350 ex VAT.

1.6.3 The ES written statement document presents an assessment of the likely significant environmental effects of the Proposals and is structured as follows:

1. Introduction
2. The Site and its Setting
3. Geology and Mineral Reserves
4. The Development Proposals
5. Context, Need and Alternatives
6. Highways and Transport
7. Landscape and Visual Impact
8. Ecology and Biodiversity
9. Soils and Agricultural Land Quality
10. Groundwater Environment
11. Flood Risk & Surface Water
12. Noise
13. Dust and Air Quality
14. Cultural Heritage and Archaeology
15. Public Rights of Way
16. Ground Conditions and Geotechnical
17. Cumulative and In-Combination Effects
18. Summary and Conclusions

## 1.7 **Assessment Methodology and Significance Criteria**

- 1.7.1 The significance criteria used by each respective technical consultant are discussed within the technical reports presented in Appendices 2-13 of the ES. The assessment of impact significance is determined by its magnitude (i.e. how far the impact deviates from the established baseline conditions) and the receptor sensitivity. The following factors are also of relevance: whether the impact is direct or indirect; the value of the resource (international, national, regional and local level importance); the duration involved (short, medium or long-term); the reversibility of the effect; and the number of receptors, including whether the impact occurs in isolation or is cumulative or interactive.

1.7.2 Assessment of the significance of impact effects has been undertaken using appropriate national quality standards where available. Where no such standards exist, the Generic Significance criteria adopted are identified in the tables below.

<b>Impact magnitude/probability/reversibility</b>	<b>Assessment criteria examples</b>
<b>Negligible</b>	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.
<b>Low</b>	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstances/situation.
<b>Medium</b>	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
<b>High</b>	Total loss or major/substantial alteration to key elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally

<b>Receptor sensitivity/value/importance</b>	<b>Assessment criteria examples</b>
<b>Low</b>	The receptor/resource is tolerant of change without detriment to its character, or is of low or local importance.
<b>Medium</b>	The receptor/resource has moderate capacity to absorb change without significantly altering its present character, or is of moderate/high importance.
<b>High</b>	The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.

<b>Impact</b>	<b>Negligible</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Receptor</b>				
<b>Low</b>	Negligible effect	Negligible to Minor effect	Minor effect	Moderate effect
<b>Medium</b>	Negligible effect	Minor effect	Moderate effect	Moderate to Major effect
<b>High</b>	Negligible to Minor effect	Minor to Moderate effect	Moderate to Major effect	Major effect

NB - The effects of impacts can be adverse, beneficial or neutral

## 2. THE SITE AND ITS SETTING

### 2.1 Site location and description

- 2.1.1 The location of the site is indicated in Figure 1 below, with the detailed site plan shown in Plan ES23-1. The proposed Bourbles Quarry site (The Site) is centred at grid reference SD377476 and the site lies within the administrative boundary of Preesall Parish and within the Wyre Council area, located within the County of Lancashire.

Figure 1: Site Location



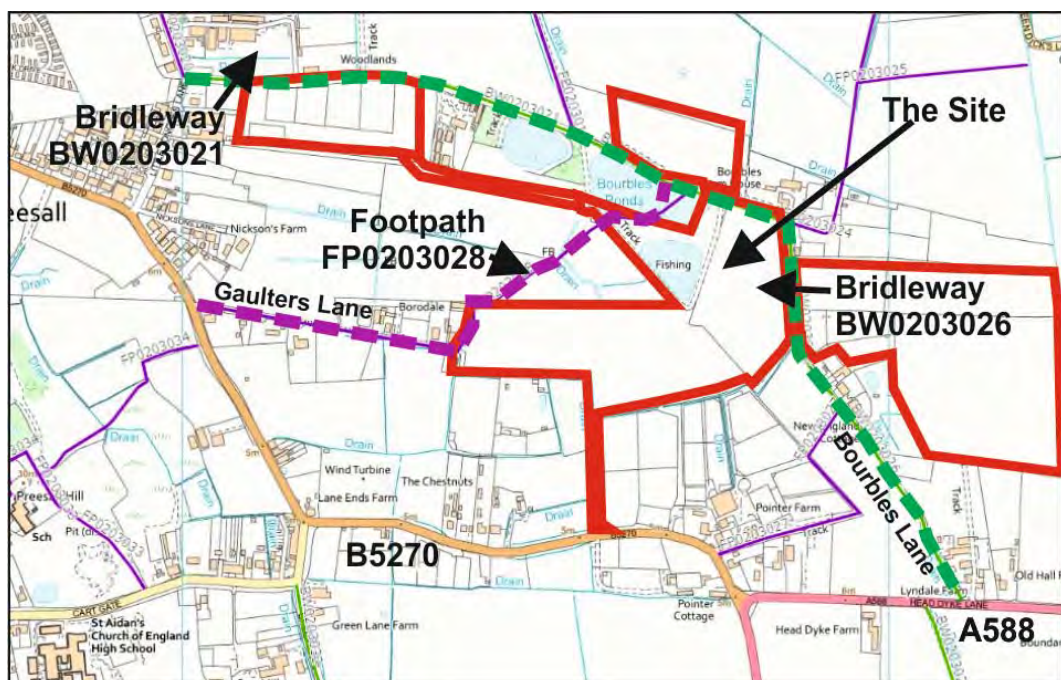
- 2.1.2 The Application Area lies in an extensive area of very low relief on the Fylde coastal plain, located between 5m -10 m AOD. A series of small, raised areas are located to the west of the site, with the highest local elevation of 25m AOD recorded near Preesall, about 2km to the southwest.

- 2.1.3 The Application Area is generally located on a slightly raised area of ground with a break in slope at the northern and southern site boundaries, approximately coinciding with the 5m AOD contour line.
- 2.1.4 The Site covers a number of agricultural holdings and lies directly adjacent to land previously worked for sand and gravel. The site is located approximately around 1.5km to the east of the village of Preesall and 2.5km south west of Knott End-on-Sea.
- 2.1.5 The application area extends to approximately 20.68 hectares (about 51.1 acres) of mainly arable and general agricultural land, with small lakes and a large fenced “duck breeding pen” as shown in Plan ES23-1. The site is bounded by arable fields and with isolated farm and residential properties. There are small-scale commercial businesses operating near the site boundaries, including a kennels, equestrian fields and a small
- 2.1.6 The site mainly comprises flat-lying agricultural land that is divided into a series of large arable and grass fields located either side of the proposed Bourbles Quarry site, with a series of small fishing lakes lying central to the proposed development.
- 2.1.7 Within the site boundary, surveyed levels range between 4.8m – 6.7m AOD, with the surface topography being generally flat lying or very gently undulating, with ground levels generally falling towards the drainage ditches that form the site boundaries.
- 2.2 **Site setting**
- 2.2.1 The site lies on the Fylde Coastal Plain the coastal plain, with Preesall Sands located only about 1.5km to the north. This forms part of the wider Morecambe Bay area that is highly designated due to its bird activity and biodiversity. This area comprises two sites of international importance (SAC, SPA or RAMSAR) that occur within 2 km of the site boundary.
- 2.2.2 The coastal plain is separated from the sea (Morecambe Bay) by a large-scale flood defence wall that extends westwards from Knott End-on-Sea eastwards all along the coastline. A series of other local flood defences are also present in the area.
- 2.2.3 The Site is not within any nationally designated landscape i.e. National Park or Area of Outstanding Natural Beauty, however the Morecambe Bay Ramsar site follows the coastline and the banks of the River Wyre Estuary. The Morecambe Bay Special Area of Conservation (SAC) follows the coastline to the north of the site.

There are no Local or National Nature Reserves within 2 km of the site boundary.

- 2.2.4 The coastline and the banks of the River Wyre Estuary are also designated as the Wyre Estuary Sites of Special Scientific Interest (SSSI). This is an area of intertidal estuarine flats and ungrazed saltmarsh, which has been designated for ecological reasons due to the habitat it provides for birdlife and rare flora.
- 2.2.5 The site is located across the catchment divide between the River Wyre, 3km to the west and Pilling Water/Broad Fleet, 3km to the east. Field drains commencing 650m to the west of the site flow directly to the River Wyre and drains commencing 700m to the east of the site boundary flow towards Piling Water/Broad Fleet. Drainage in the surrounding area is dominated by field edge ditches and dykes, the largest of which are Wheel Foot Watercourse, Middle Dyke and Cocker's Dyke. These are designated as 'Main' rivers and flow into Morecambe Bay, 3 km to the north of the site.
- 2.2.6 A footpath crosses the central part of the site, passing south through the fishing lake areas from Bourbles Lane, then trending south-westwards across open farmland outside of the site boundary to Gaulters Lane. This footpath is referenced FP0203028 on the published register of local footpaths.
- 2.2.7 Bourbles Lane is a designated Bridleway (ref: BW0203021 and BW0203026) that passes adjacent to or through the site. These Public Rights of Way (PRoW) are shown in Figure 2 below.

Figure 2: Public Right of Way map





### 3. GEOLOGY AND MINERAL RESERVES

#### 3.1 Site Geology

3.1.1 The published geological maps of the Preesall area indicate that the land is underlain by a mixed spread of Glacial deposits, comprising mainly Tidal Flat deposits of Quaternary age. These comprise mainly soft dark grey silty clays and that are occasionally consolidated. The site is underlain by sandstones of the Sherwood Sandstone Group, with the Mercia Mudstone mapped to the south of the site as a "fault bounded" area. The Mercia Mudstone is also mapped to the west as a "fault bounded synclinal structure" beneath the River Wyre estuary.

3.1.2 However, in a narrow zone of land between Bourbles Farm and Knott End, comprising mainly sands and gravels. The historical sand and gravel workings in this area of the Wyre District appear to be located in this mapped zone of Storm beach deposits, including the lakes present at Bourbles Farm

#### 3.2 Drilling Investigations

3.2.1 There have been two phases of geological and hydrogeological borehole drilling on the site, with the borehole locations shown on Plan ES23-2. These investigations involved the drilling of shell and auger boreholes and also rotary auger boreholes to collect bulk samples for analysis and testing. Standpipes were installed in a number of exploration boreholes to enable monitoring of the groundwater levels across the site.

3.2.2 The boreholes were drilled proved sand and gravel comprising brown, good quality medium to coarse Sand & Gravel with some cobbles, overlain by thin soils which are generally less than 0.5m thick. The mineral proved in the boreholes ranges from around 1.5m to over 6m in thickness, having mean thickness of around 2.8m.

3.2.3 The sand and gravel deposit is mapped to be present in a general zone trending north-west to south-east across the site, but areas of very thin mineral and "barren" ground were also proved when moving away for the main mineral zone.

3.2.4 All the boreholes were terminated in a grey, very silty sand deposit which also contains black organic material and fine shell fragments. It is considered that this material is too fine grained and silty to produce a saleable aggregate product.

3.2.5 The base of the workable sand and gravel rests directly on the fine silty sand at an elevation of around 1.5mAOD across the majority of the site, reducing to 0.5m AOD in the thickest (western)part of the site. Groundwater levels recorded in a number of monitoring boreholes have been proved to lie in the general range 0.8m to 1.5m below ground level (generally around 4.3m AOD).

### 3.3 Mineral Quality & Mineral Resources

3.3.1 Laboratory testing of borehole samples confirms that the mineral deposits proved at the proposed Bourbles quarry comprise some 36% gravel (+4mm), with the mean sand fraction (-4mm +63 $\mu$ m) forming about 60% of the deposit. The deposit is generally clean with a mean silt content of only 4%.

3.3.2 The laboratory testing also confirms that the gravel fraction is hard and durable (10% Fines Value – 300kN), with a low water absorption (0.2%) and a low Magnesium Sulphate Value of 3.2%. These laboratory results confirm that the sand and gravel proved on the site is a high-quality mineral deposit, that following washing and grading, can be used in a range of concrete products, drainage aggregates and other high specification construction materials for the building and construction sectors.

3.3.3 Within the proposed potential mineral extraction area of about 11.9ha (shown in Plan ES23-3), it is estimated that in-situ mineral resources of around 513,000 tonnes may be present, which after extraction and processing may yield approximately 487,000 tonnes of saleable sand and gravel.

3.3.4 Excavation of the mineral will involve removal and temporary storage/ direct placement of around 66,000m<sup>3</sup> of mainly soil overburden, which will be stored and used in the restoration of the site.

3.3.5 Following mineral extraction, and as part of the necessary restoration of the site, it is estimated that some 220,000m<sup>3</sup> of imported inert backfill will be required to ensure that the site can be restored to designed scheme, as shown in Plan ES23-4.

## 4. THE DEVELOPMENT PROPOSALS

### 4.1 Introduction

4.1.1 The Sand & Gravel reserves within the proposed extraction area will be extracted on a progressive basis over a period of about 5 years. The level of output from the site is expected to average around 100,000 tonnes per annum extracted within a series of separate phases, as shown in Plan ES23-3.

4.1.2 The proposed restoration scheme comprises the re-instatement of the majority of the site to original levels using imported inert fill materials (about 220,000m<sup>3</sup>), with localised areas of pasture, arable land, lakes, woodland and wet woodland as shown in Plan ES23-4. The restoration phase of the proposals may take a further 2 years to complete to return the site back to agricultural land at pre-development level thus providing a site development time period of about 7 years.

### 4.2 Outline Working Scheme

4.2.1 The sand and gravel deposit is generally around 2m to 3m thick, with a maximum of around 6m in the western (Phase 1) part of the site. It is proposed that this will be excavated on a campaign basis two or three times per year from a single face using a tracked excavator that will load a series of dump trucks. These dump trucks will then haul the mineral to the processing plant and stocking area located adjacent to the processing plant in the southern part of the site. The as-raised material will then be processed to produce a series of single-sized gravel and washed sand products.

4.2.2 The presence of a water table within sand and gravel indicates that the deposit will require dewatering to be worked in a 'dry state'. Dewatering the excavation will be carried out during the drier summer months to minimise the amount of de-watering and also to allow the base of the excavation to be "lined" if required as part of any environmental permitting and backfilled with suitable imported inert materials. The water will be pumped into a series of lagoons before being discharged into the local ditches. It is proposed that the Phase 1 part of the site will not be de-watered due to the thickness of the mineral, thus the upper (dry) unit of mineral will be worked separately from the lower (wet) sand and gravel that will be extracted in a "wet dig". This area will then be restored to lakes, woodland and pasture using basal silty sand from the Phase 2 area and plant/ lagoon areas of the site.

4.2.3 The development proposals involve restoring much of the site to agricultural land, lakes and area of biodiversity, however, it is proposed that the plant area of the site will be restored to tourism end-uses comprising lodges.

### 4.3 Inert Backfilling Operations

4.3.1 The initial site works will comprise mineral extraction from the Phase A area that will be excavated to a shallow depth of around 2m, with the sand and gravel stockpiled adjacent to the proposed processing plant. The excavation area will then be backfilled and compacted with suitable imported engineering fill, before the site facilities and processing plant are constructed.

4.3.2 The proposed dewatering within the Phase 2, 3 and 4 areas of the excavation will allow the base of the site to be "lined", if required within the Environment Agency Permit for the proposed infilling works. Each of the designated infilling areas will then be backfilled with suitable imported materials. Again, this will be carried out as part of the EA recovery permitting regime for the restoration of the quarry site.

4.3.3 During the wetter winter months, when site access with HGV traffic may be difficult, it is proposed that an area adjacent to the main compound area will be designated a tipping zone for incoming inert backfill loads. During the drier mineral campaign periods any material deposited within the temporary tipping area will be loaded onto dump trucks and will be transported to the tipping area as part of the restoration works.

4.3.4 The inert fill materials will be deposited within the void created following mineral extraction will be pushed out using a tracked bulldozer to the required restoration levels prior to coving with soils from the boundary screening bunds.

### 4.4 Site Layout & Access

4.4.1 The proposed processing plant will be located on the open area located in the southern part of the site, as shown on Plan ES23-3. All of the site facilities and buildings and stockpiles will be located in the designated plant area and all overburden and soil stripped as part of the initial works will be stored in bunds around the plant area.

4.4.2 It is proposed that there will be direct access off the B5720 and A588 for incoming and outgoing HGV traffic using a new site entrance located in the southern part of the site. The quarry access scheme proposed is shown in Plan ES23-3.

4.4.3 Within the proposed plant area, a weighbridge, site office, welfare facilities and wheel wash will be constructed during the Phase A operations. The general weighbridge configuration will allow vehicles to "tare" into the site and "weigh-out" without drivers having to leave their cabs. Adjacent to the offices and access road, a car park will also be constructed. It is proposed that the offices, welfare facilities and workshop will not be permanent buildings but "portakabin" type structures.

#### 4.5 Fuel Tanks & HGV Facilities

4.5.1 It is proposed that parking for up to 8 HGVs will also be made within the plant area. A fuel tank will also be required within the plant area for re-fuelling the mobile plant operational on the quarry site. All fuel tanks will be bunded to ensure that there will be no pollution from the fuel tanks due to leakage.

#### 4.6 Lighting

4.6.1 All mobile plant will have to operate with lighting fitted and maintained to provide adequate illumination, as stipulated by Health and Safety requirements. This plant lighting will be turned off when the plant is not in operation.

4.6.2 It is proposed that the area around the offices will be illuminated by a series of low emission lights, which will not remain on during the hours of darkness unless required for Health and Safety or security reasons. It is proposed that all other lights around the plant and workshop areas will be switched off when the site is closed. However, it should be noted that the local highway is currently illuminated from the street lighting, thus no additional lighting is deemed necessary adjacent to the public highway.

4.6.3 There is no fixed lighting proposed within the extraction area at any time. All of the proposed lighting on the site proposed will comprise low emission light where possible and will be directional and shielded to minimise their off-site impact.

#### 4.7 Site Drainage

4.7.1 The design of the proposed plant area will ensure that all surface water run-off will be directed into the proposed lagoons. This will also reduce the potential water losses from the site during the mineral processing operations, minimising the environmental impact of the operations. There will be no discharge of surface water run-off from the plant area to any drainage or sewer system, as all run-off will be collected in the lagoon system.

4.7.2 Any discharge from the lagoon system to the local drainage ditches will be controlled by an Environmental Permit from the EA.

#### 4.8 **Operating hours**

4.8.1 It is proposed that hours that the site will be open are as follows:

Monday to Friday	07.00 to 18.00 hours.
Saturday	07.00 to 13.00 hours.
Sundays & Bank and Public Holidays	Closed

4.8.2 Outside these hours, any work within the site will be restricted to essential plant maintenance and for essential safety work.

#### 4.9 **Employment**

4.9.1 The proposed development is expected to directly employ around 5 people at the site during the majority of the year. In addition to direct employment, the proposals will also create a demand for road haulage to deliver products, which may include up to 15 drivers employed on a regular daily basis depending upon site output.

4.9.2 During the restoration phase of the development, specialist contractors including agricultural contractors and soil scientists will be directly employed at the site.

## 5. CONTEXT, NEED AND ALTERNATIVES

### 5.1 Introduction

5.1.1 The applicant, the Baxter Construction Ltd, that is part of the Baxter Group of companies, is involved in numerous construction projects in Lancashire.

5.1.2 The applicant would benefit from the granting of planning permission to secure a reliable and steady supply of sand and gravel for use in its construction projects. The application site is well located to provide this supply to the Company's projects and the site contains high-quality sand and gravel reserves that would be suitable for use in construction. The applicant would also benefit economically from the ability for the site to supply sand and gravel aggregate to the wider construction market to enable delivery of a range of construction schemes including housing, employment, and infrastructure in the locality.

5.1.3 In environmental and planning terms the question is whether there is a need for such a site to meet the applicant's need as well as supplying mineral aggregate to meet the wider needs of the construction industry in Lancashire. Having established the level of need it is appropriate to consider whether there are other suitable alternatives which could meet identified need for sand and gravel.

### 5.2 Need

5.2.1 In terms of the approach to the need for sand and gravel supply in Lancashire it is useful to initially look at the position set out in the Development Plan (including the Minerals Local Plans) for the County, albeit the minerals element of the Development Plan is now out of date.

5.2.2 It is then particularly helpful to consider the main points set out in the latest Local Aggregates Assessment for Lancashire 2022, which specifically considers the supply and the need for sand and gravel supply in the County.

#### The Development Plan

5.3 The key points to be taken from the Development Plan are as follows:

- The previously adopted mineral plans were planning for a 10 years' time horizon (to 2021). They are now therefore out of date.
- The adopted plans were planning to supply 0.5 million tonnes of sand and gravel per annum.

- Issues were raised over problems of maintaining a supply of high-quality sand following falls in production.

5.3.1 Potential replacement Mineral Local Plan documents have not yet been consulted upon. Therefore, there is no short-term prospect of the adoption of replacement up to date mineral local plans for the County.

5.3.2 In the short-term it is necessary therefore to rely on the content of the latest Local Aggregates Assessment for the County to provide guidance on supply levels and the need for additional supply of sand and gravel.

### **The Joint Lancashire Local Aggregates Assessment – LAA 2022**

5.3.3 The key points that can be gleaned from the LAA 2022 are as follows:

- Average sand and gravel sales over the previous 3 years were – 0.13 mtpa (million tonnes per annum) – compared to the previous Mineral Local Plan objective of maintaining a supply of 0.5 mtpa.
- The steep decline in supply has resulted from the closure/working-out of six quarry production/supply units in the period 2015 to 2021 (with three closing in 2021).
- Using various methodologies, the forecast future demand (need) for sand and gravel on an annual basis varies between 0.41 mtpa (based on the past 10 years average sales data -which includes some recessionary years) to 0.57 mtpa (based on future housing delivery/forecast of demand using Local Plan forecasting for 2021).
- The LAA 2022 indicates that in 2021 there were approximately 4.4 million tonnes of sand and gravel reserves with planning permission in the county. These reserves are held in three quarry/potential production sites. Unfortunately, in terms of actual supply, one of these sites is classed as “inactive” and one (Runshaw) – which holds the majority of the permitted reserves – has not yet commenced working in spite of obtaining planning permission some time ago. There is therefore considerable doubt over the deliverability of supply from the landbank and the ability of the landbank to help maintain a steady and adequate supply of sand and gravel to meet forecast annualised demand requirements.
- Not only are there very few sites making up the landbank of permitted sand



and gravel reserves, the major holder of the sand and gravel reserves remains non-operational. Even if it were to commence, and there appears to be some uncertainty around this, it is only a single production/supply site. Its contribution to annual supply therefore has limits and there would be minimal competition.

- More sand and gravel reserves need permitting as quickly as possible, from a range of sites, to rapidly increase and then sustain sand and gravel supply whilst making sure that various local markets are supplied and there is competition in the aggregate supply market – to ensure prices of construction materials are affordable and do not hamper development and growth that is planned.
- The LAA 2022 considers planning for sand and gravel supply over the period 2021 to 2036 (15 years). For the various types of demand forecast/calculation the document is showing shortfalls in future sand and gravel supply of between 1.7 and 4.2 million tonnes for this 15 years period.
- The document also raises concerns on over-reliance on a single quarry (Runshaw) to meet a large part of future needs as this raises issues over location/distribution of supply and the amount of annual supply that can be sustained from a single production unit. This could constrain the amount of supply and impact on prices/competition.

5.3.4 The LAA 2022 is highlighting that the current level of sand and gravel supply is well below what was previously planned for and significantly below what forecasts indicate are likely to be needed annually over the next 15 years or more to meet the needs of the construction sector. Whilst there are permitted reserves, their ability to supply the construction market effectively and efficiently is questionable. There is therefore a need for new production/supply sites to rapidly increase and then sustain sand and gravel supply in Lancashire.

## 5.4 Alternatives

5.4.1 As explained in the section above, the significant drop off in sand and gravel supply in recent years has resulted from a series of quarry sites being worked-out and closing. There are still permitted reserves of sand and gravel, but these are contained in a small inactive site and a large site that has not commenced operation. There is therefore doubt over the ability of the permitted sites and the landbank to contribute effectively to year-on-year supply needs. At the same time there is no draft replacement Mineral Local Plan document out for consultation, so no visibility on potential supply sites that might be allocated in a future plan to contribute to annual supply and meet the Government's requirement of maintaining a steady and adequate supply of sand and gravel. There are therefore very limited, reliable alternatives in terms of either permitted or allocated production/supply sites that could deliver a year-on-year supply of sand and gravel in a meaningful and reliable manner.

5.4.2 In terms of broader alternatives – other aggregates, recycled aggregate, secondary aggregate and marine dredged sand and gravel – it is useful to look again at the content of the LAA 2022, as follows:

*“The LAA 2022 - Assessment of supply options*

*This chapter will present information on the alternative supply options available to meet the forecast demand identified in the previous chapter.*

*Other aggregates*

*Shale may be used to replace sand and gravel in some applications such as fill. There is some scope for substitution in concreting applications from washed crushed sandstone. These alternatives are also available in different locations separate from the main sand and gravel producing areas within the Plan area. They represent a moderate contribution to supply, notwithstanding the potential limitations on their uses.*

*Recycled Aggregates*

*Recycled aggregate sales are not recorded through the AWP or CLG monitoring process. Consequently, it falls outside of the forecast demand calculated in the previous chapter. Nationally it is estimated that around 29% of total aggregate use is met through recycled and secondary aggregates (MPA, 2019). It is assumed that inert construction and demolition waste will continue to be produced, and will continue to be recycled – at least at the existing levels – throughout the plan period.*

*Because of this, and the current uncertainties around the quantities of inert waste and recycled aggregate produced, we are not proposing to amend the forecast demand, either up or down, to reflect the contribution that recycled aggregates could make; we are assuming that the currently unrecorded contribution they make will continue to be made through the plan period; this will be reflected by, but not included in, the forecast demand.*

#### *Secondary Aggregates*

*There is minimal secondary aggregate production in the plan area, and it is not considered to be a significant option for contributing towards meeting the forecast demand for aggregates.*

#### *Marine Dredged Sand and Gravel*

*Landings of marine dredged sand and gravel in the plan area ceased in 2008. There is no indication that this will start again. Currently demand is being met by land-based sources and where required via imports from landing points in neighbouring authorities and it is expected that this will continue for the duration of this plan period. There is existing consented marine aggregate reserve within the Northwest region to supply volumes in excess of historic landing levels for the Lancashire market. Additional marine aggregate reserves are likely to be developed in the region to allow further capacity to supply via forthcoming tender rounds operated by The Crown Estate."*

- 5.4.3 It is apparent from this passage from the LAA 2022 that, whilst there are a number of broader alternatives, their likely contribution to supply is going to be particularly limited and unpredictable over the next 15 years planning time horizon. Where there is some contribution from recycled sources, this is already taking place, is unrecorded, and will therefore unlikely be a reliable additional contributor to aggregate supply in the next 15 years. In other words – it appears highly likely that the annual need for somewhere in the region of 0.5 mtpa plus of supply will have to come from primary land won sources – i.e. sand and gravel quarries.
- 5.4.4 As explained above, there are issues with reliance on existing permitted sites to meet supply requirements due to doubt over their ability to contribute to supply at all and the level of contribution that they might make year-on-year if they were to contribute. At the same time there are no new sites contained and proposed in any new forward planning documents. Therefore, the Mineral Planning Authority (MPA), in the present circumstances and in light of the LAA 2022, only has those proposals set out in

planning applications, like this application from the Baxter Group, as current practical options for adding to and sustaining sand and gravel supply.

- 5.4.5 In that regard therefore, this proposal is an important supply consideration for the MPA and significant planning weight should be given to the contribution it could make to sand and gravel supply.

## 5.5 Conclusions

- 5.5.1 This chapter has confirmed and evidenced that there is a strong need for additional sources of high-quality sand and gravel like those contained in the planning application site. The site could therefore make an important positive contribution to aggregate supply and meeting the local needs of the construction sector, including those of the applicant, Baxter Group.

- 5.5.2 This chapter has confirmed and evidenced that practical and effective alternatives to the proposals are both limited and unreliable. Given the level of the year on year needs over the next 15 years significant planning weight should be given to the contribution that this site could make to supply as it is evident that there will continue to be a strong reliance on sourcing supply from primary land-won sources (quarries) and there are limited options and alternatives in terms of such sites.

- 5.5.3 It is quite clear that it is going to be some time (several years) before the forward planning process can deliver a range of potential allocated sites to provide some certainty for both the minerals and construction industries and indeed local communities. Therefore, in the short-term the only practical option for boosting supply (which is needed urgently) is to grant planning permission for new sources of supply and significant planning weight must be given to the contribution that a new site like this could make to boosting and sustaining sand and gravel supply in Lancashire.

## 5.6 Potential Alternative Modes of Restoration

- 5.6.1 The proposed restoration scheme includes a mix of biodiversity, lakes and agricultural land. Agricultural land is proposed across the bulk of the site, comprising pasture and arable fields as the majority of the site is designated as “best and most versatile” agricultural land. However, in the central and southern part of the site it is proposed that a small-scale leisure lodge facility will be developed utilising the infrastructure from the minerals development.

- 5.6.2 This proposed small-scale lodge facility (of around 10 to 12 high quality lodges) will be used in conjunction with fishing holiday breaks linked to the existing and proposed fishing lake opportunities created as part of the restoration. This tourism end-use will also replace the existing duck farm business that will replace the income lost from the removal of the duck rearing business. It is proposed that the lodge development will be operated by the current landowners/ family and will assist in the replacement of this lost revenue and also create new opportunities for increased biodiversity and reduced local impacts from the large-scale duck breeding operations.
- 5.6.3 The proposed location is well removed from any surrounding residential development. This together with the proposed restoration tree planting and screening as part of the mineral development and after-care will reduce any visual impact on the local community and will have very little visibility from any public highways.
- 5.6.4 Any alternative restoration that does not include tourism would need to replace the duck breeding income thus if no tourism (small scale lodges are permitted) the area would need to be re-developed back to the existing duck pens and duck breeding activities. It is considered that this land-use would have a significantly higher environmental impact on the surrounding community and that the restoration proposed would show significant additional environmental improvement to compensate for the loss of the intensive duck breeding activities.
- 5.6.5 It is not considered that there are any alternative restoration options that would offer significant long-term benefit that can be managed to the benefit of the wider community or environment, when considering the economic aspects associated with the agricultural activities and also local environmental and landscape factors. The proposed mixture of agriculture and biodiversity/nature conservation end-uses, together with small scale tourism are therefore considered appropriate for the site's status in both the Lancashire and Wyre Council development plans.

## 6. HIGHWAYS AND TRANSPORT

### 6.1 Introduction

6.1.1 Turner Lowe Associates has prepared a Transport Statement (TS) report on the site and the proposed development, issued in March 2023, which is presented in Appendix 2, and the main findings are summarised in the sections below.

### 6.2 Baseline conditions

6.2.1 The TS presents a review of the local highway network including accident records. The site is north-west of the A588 and north of the B5270 Lancaster Road. The A588 is a wide single carriageway road that is part of the strategic highway network and is subject to the national speed limit. The B5270 is a wide single carriageway road with a 30mph speed limit.

6.2.2 The current access into the site is via the north-western part of Bourbles Lane and Little Tongues Lane, which is a typical rural residential road with on-street parking and high pedestrian activity and is unsuitable for HGV use. Potential alternative accesses to the proposed site are via Gaulters Lane and the southern end of Bourbles Lane, however Gaulters Lane is a single-track informal lane and is not suitable for HGV traffic, whilst Bourbles Lane is a private road which the Applicant does not have rights of access over at its southern end.

6.2.3 Department for Transport traffic count data for the A588 just east of the junction with Lancaster Road indicates a pre-covid (2019) average daily traffic flow of 6035 vehicles including 115 HGVs and 31 buses/coaches, which the TS considers very low for an A-road. The TS has reviewed accident record data for the area, which indicates only two accidents have occurred in the vicinity of the site since 2013. Both occurred at the junction of Lancaster Road with the A588, in 2013 and 2021. There are no records of accidents having occurred over the last 23 years for the stretch of Lancaster Road between the location of the proposed site access and the A588 junction. The TS concludes that the accident record for the area indicates a good safety record.

### 6.3 Potential impacts and effects

6.3.1 The TS has assumed mineral extraction of 100,000 tonnes per annum for a period of 5 years at the site with infilling using inert fill at various times as the extraction progresses with a final 1-year restoration period to complete the scheme. The proposed access/egress route serving the mineral extraction site has been subject to preliminary discussions with LCC.

- 6.3.2 The proposed access/egress will be via a new access road off Lancaster Road around 200m west of its junction with the A588. The design of the access ensures that vehicles can only enter the site by travelling west along the A588, and those leaving the site are only be permitted to turn left onto Lancaster Road, eastwards towards the A588 junction. The proposed exit incorporates a visibility splay appropriate for a 30 mph road. It is proposed that the new road access constructed as part of the minerals development will be retained on completion of the quarry works as part of the proposed leisure end-uses on the site as part of the restoration.
- 6.3.3 The TS has assessed the likely traffic generation of the proposed quarry site and its potential impact on the local highway network. The analysis indicates an average of 37 HGV movements per day during the 5 year extraction phase and 17 per day during the year of restoration after completion of extraction due to the development, and in both cases a practical maximum of 60 per day. These values are below the level at which an air quality assessment is required.
- 6.3.4 The report assesses the impact of the predicted traffic increases on the local highway network as a 0.5% increase in traffic, with 2.5% of the total flow being HGVs. The TS has concluded that these increases in total flows and HGV content are very low for an A-class route and will not affect the safety of the local road network, and that the A588 will have no difficulties accommodating the development traffic. The potential impacts of the development on traffic flows are therefore concluded to be negligible.
- 6.3.5 In terms of sustainability, Lancaster Road is on a number of bus routes, that may prove useful for on-site employees that do not travel to the site in one of the HGVs.

#### 6.4 **Conclusions and recommendations**

- 6.4.1 The TS has concluded that the proposed site access/egress is suitable and safe and will have a negligible impact magnitude on the local highway network, which is considered to have a low sensitivity to the assessed traffic increases associated with the development. The residual effects of the development during the operational period are therefore assessed as negligible and are not considered to be significant.

## 7. LANDSCAPE AND VISUAL IMPACT

### 7.1 Introduction

7.1.1 ReLandscape Ltd has prepared the Landscape and Visual Impact Assessment report, issued in July 2023, which is presented in Appendix 4, and the main findings are summarised in the sections below.

### 7.2 Landscape baseline

7.2.1 The report has considered landscape features within 2km of the site. The site currently consists of arable fields and a fenced-off wildfowl rearing area, whilst the land to the south and east is used for livestock and horse grazing. The study area falls within the Lancashire and Amounderness Plain National Character Area (NCA), described as an area of high-grade agricultural land, bounded by Morecambe Bay in the north and Liverpool in the south. At a local level the site falls within the Coastal Plain/Knott End-Pilling Landscape Character Area, whilst the land to its south in the study area falls within the Mosslands/North Fylde Mosses Landscape Character Area.

7.2.2 The Coastal Plain/Knott End-Pilling landscape classification comprises an intensively farmed, settled landscape with a post-medieval enclosure pattern, with many hedgerows (some ancient), trees sheltering scattered farmsteads, some arable crops and a network of raised lanes and stone bridges connecting farms to roads.

7.2.3 The Mosslands/North Fylde Mosses landscape classification comprises the largest surviving area of uncultivated peat mossland in Lancashire. The reclaimed mosses are devoid of development and low 'islands' surrounding the mosses support a network of minor lanes and modern houses. The dominant land use is improved pasture for dairy herds with large fields. Raised roads are bordered by hedges and ditches and occasional copses and shelter belts of trees give a sense of a well-wooded horizon.

7.2.4 In terms of natural and cultural heritage the report concludes that the site has limited ecological value, and cultural heritage makes a low contribution to the landscape value as the landscape contains relatively few historic features.

7.2.5 The site and study area forms an everyday landscape on the edge of Preesall which the LVIA report assesses as being of medium landscape value, although it notes that the farmland is likely to be 'valued' by those living immediately next to it.



### 7.3 **Visual baseline**

7.3.1 The geographic extent of the visual baseline area has been assessed digitally through the production of a Zone of Theoretical Visibility based on a topographic model. A detailed visual site survey has also been undertaken from 13 viewpoints including residential areas, publicly accessible locations (PRoWs, open spaces), and transport routes considered representative of current conditions and potential visual receptors.

7.3.2 Visual receptors identified include: residents in properties within 1km of the site and also on the eastern edge of Preesall Hill and Knott End/Preesall; users of Public Rights of Way; motorists and pedestrians using the local lane and public road networks within 0.5km of the site.

7.3.3 The significance of impact effects on these receptors has been assessed through consideration of their sensitivity and the magnitude of the predicted impacts.

### 7.4 **Proposed Development and mitigations**

7.4.1 The proposed development is temporary, lasting around 7 years in total, comprising extraction over approximately 5 years followed by around 2 years of restoration. The main aspects considered to result in potential landscape/visual effects are: a new site access road; creation of temporary operational features (site office, weighbridge, processing plant and stockpiles, temporary soil storage bunds), creation of mineral excavation areas with progressive regrading and restoration of the landform.

7.4.2 Landscape mitigations incorporated into the design of the proposed operational phase of the development include: advanced screening planting along the northern boundary; supplementary hedgerow and tree screening planting on boundaries; maintenance of hedgerows to taller heights to enhance screening; seeding of selected soil bunds.

7.4.3 The proposed restoration comprises backfilling of excavations with reclamation materials capped with retained soils, and planting and habitat restoration to result in biodiversity and landscape character that is enhanced compared to current conditions.

### 7.5 **Potential impacts and effects on landscape**

7.5.1 Based on the site's existing condition, land use, and the immediate context and nature of neighbouring land uses, the assessed impact effects on the landscape character during the operational phase have been assessed as slight-negligible negative for the Lancashire & Amounderness Plain NCA and moderate for the Knott End-Pilling landscape character area (LCA) as loss of sections of hedge and arable and pasture farmland would be limited and localised and the operational phase is considered to be

of medium-term duration. Effects on the North Fylde Mosses LCA are assessed as slight negative as views into the site from this area are limited.

7.5.2 The effect of the proposed hedge loss is judged moderate-slight negative. The effects on other landscape features during the operational period is assessed as slight negative.

7.5.3 On completion of restoration, the residual effects on landscape are assessed as negligible and neutral for the NCA, and moderate positive for Knott End-Pilling LCA. The impact effects of the development during operation and after restoration on landscape character are not considered to be significant.

## 7.6 **Potential impacts and effects on visual amenity**

7.6.1 The LVIA report has considered the potential impacts of the development on thirteen representative viewpoints during the pre-extraction, extraction and restoration phases. Residents and home and people at leisure in the landscape are classified as high sensitivity to changes in their view, motorists using local roads as medium sensitivity, and staff and pupils at the nearby school as low sensitivity. The existing views have been assessed as being of low value, although they may be valued locally by those living next to them.

7.6.2 Residents at home in several properties are assessed as having major impacts on their views during the operational phases, including at the properties Ourome, Bourbles Farm House, Woodlands, New England Cottage and Crossing Cottage, and moderate for residents on Cartgate. Effects on other nearby residents are judged to be minor. Effects on the nearby school staff and pupils are judged as moderate.

7.6.3 Users of the footpath and bridleways on or immediately adjacent to the proposed development are assessed as having a major magnitude of effect, with users of nearby footpaths would have moderate to minor impact. Motorists on Lancaster Road would be subject to moderate impact, and minor from Green Dick's Lane.

7.6.4 During the operational phase of the development, due to the localised nature and medium-term duration of the operational phases of the proposed development, and its reversibility through the proposed restoration, the significance of the visual effects on most visual receptors nearby the site has been assessed as moderate negative, with the remainder classed as moderate-slight or slight negative. On completion of the restoration, the residual effects on visual amenity have in most cases been assessed as moderate-slight or slight neutral, although in one case moderate positive effects have been assessed.

## 7.7 Conclusions and recommendations

- 7.7.1 The design of the proposed development has evolved as the LVIA has progressed and mitigation measures to limit landscape and visual impacts have been incorporated into both the operational phase and restoration proposals. These result in the landscape and visual impact effects being assessed as being limited to moderate to slight negative during the operational period and are therefore not considered significant.
- 7.7.2 The residual impact effects have in most cases been assessed as reducing to moderate-slight, slight or negligible neutral on completion of the restoration, although moderate positive residual effects have been assessed for the Knott End-Pilling LCA and for an area within the site near the Phase 4 development area. The assessed levels of residual landscape and visual impact effects post-restoration are therefore not considered significant.

## 8. ECOLOGY AND BIODIVERSITY

### 8.1 Introduction

8.1.1 Envirotech has undertaken an Ecological Appraisal of the site in May 2019 (see Appendix 4a) and subsequently an Ecological Impact Assessment (EclA) report (see Appendix 4b) and a Biodiversity Net Gain (BNG) report (see Appendix 4c), both issued in July 2023. In addition, a tree survey has been undertaken by Bowland Tree Consultancy Ltd resulting in an Arboricultural Constraints Appraisal report issued in February 2021 (see Appendix 5).

### 8.2 Baseline conditions

8.2.1 The Ecological Appraisal and EclA have established the baseline ecological conditions on site through a combination of desk-based research and a variety of field surveys.

8.2.2 The EclA notes that the plant species assemblages on site are all common in the local area and, combined with the high stocking rates of carp and mallard at the site and very low water quality, result in the site being of low ecological value.

8.2.3 Habitats – although the desk study found that some parts of the site are mapped as ‘Coastal and floodplain grazing marsh’, a Habitat of Principal Importance (HPI), the field surveys found that none of the site displayed characteristics of this habitat. The EclA concluded that the marshy grassland on site falls under the species poor category and does not constitute a priority habitat type. The hedges on and around the site were also found to be species poor and none classified as important under the Hedgerow Regulations, although all hedgerows are HPIs. The arable land and ponds/lakes on site were also considered to not constitute HPI.

8.2.4 Amphibians – the stocking density of fowl and fish in the ponds/lakes on site are such that it is unlikely that amphibian species could breed successfully. No amphibians were observed during the field surveys and all eDNA testing undertaken was negative for Great crested newts. Common toad was not observed.

8.2.5 Bats – the field surveys found that the site provides negligible and low quality habitat for commuting and foraging, with no suitable roost sites on site and few in the local area. Four bat activity surveys undertaken in 2019 and 2023 found that the numbers of bats observed foraging over the site was low and was limited to common bat species. No bats were recorded roosting on or near the site.

8.2.6 Birds – the wintering bird surveys found very low numbers of wildfowl and wader species on the site, with use focussed on the lakes, with a high level of tolerance of

anthropogenic activity. The arable fields and grassland habitats on site were considered of low value for overwintering birds. The fields north of the site were recorded to be used by Pinkfooted Geese and Whooper Swan, and the field survey found that the Whooper swan count was above the 1% significance threshold. The nesting bird survey concluded that the hedges, areas of scrub and small stands of woodland on the site might be used for nesting between March and September. There is also occasional use of the arable areas by ground-nesting birds.

8.2.7 The EclA surveys concluded that reptiles were likely absent from the site, and that the site was not of any local significance for invertebrates. No indications of brown hares or otters were observed, although precautionary mitigation was recommended for the latter.

### 8.3 Potential impacts and effects

8.3.1 The EclA has identified the key ecological receptors as:

- Morecambe Bay and Duddon Estuary Special Protection Area (SPA) and Morecambe Bay Ramsar – as the site provides functionally linked land for over-wintering birds.
- Morecambe Bay Ramsar, Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), and Morecambe Bay and Duddon Estuary Special Protection Area (SPA) – resulting from recreational disturbance due to the completed development
- Pilling Moss - Head Dyke Biological Heritage Site (BHS)
- Hedgerows
- Neutral and Marshy Grassland

8.3.2 Morecambe Bay and Duddon Estuary Special Protection Area (SPA) and Morecambe Bay Ramsar: The site provides functionally linked land for over-wintering birds – there will be partial loss of the site during the work, with restoration ongoing during the phased extraction. Potential displacement to over-wintering birds using the fields in the east of the site will be mitigated by restricting the timing of work in this area during periods of extreme cold stress. Use of the site itself by larger geese and swans was not recorded, and therefore not affected by the proposals, whilst the restoration to lakes and grassland will enhance habitats for some bird species. The proposed development will result in increased recreational use of the site and the nearby SPA

and Ramsar site, the potential impacts of which will be mitigated by provision of Lodge owner packs highlighting the sensitivity of the area and impacts caused as a result of recreational disturbance.

- 8.3.3 Pilling Moss - Head Dyke BHS: Disturbance impact on this site during the operation and restoration of the site will be addressed by the mitigations outlined above for the Morecambe Bay and Duddon Estuary SPA, however there will be a temporary direct loss of habitat during the development phase. The proposed phased extraction with restoration ongoing will however minimise the length of time that habitats will be lost for, and the restoration to lakes and grassland will result in an overall improvement over current conditions.
- 8.3.4 Hedgerows: During restoration, new hedgerow will be planted with a mix of native species and managed to ensure successful establishment. Proposed scrub areas to the sides of new ponds will compensate for the loss of hedgerow habitat type during construction.
- 8.3.5 Neutral and Marshy Grassland: The adjacent fields will be retained as open grassland, and improved through reseeding and careful management in the early years, with spot herbicide treatment to avoid killing non-weed species. Small depressions in the final landform will create shallow pools providing potential feeding and breeding habitats for birds.
- 8.3.6 All other ecological receptors were screened out of the EclA, although the report outlines a variety of embedded mitigation measures within the design and operational and environmental management procedures of the proposed development that will minimise impacts on these receptors. These include: precautionary mitigation during construction and restoration activities to protect common toad, other amphibians and otter; appropriate checks for nesting birds if vegetation clearance is to occur in March to September period and ceasing works if found present (subject to ecological advice); and provision of spill kits and re-fuelling plant away from ditches and watercourses to protect invertebrates;

#### 8.4 **Biodiversity Net Gain**

- 8.4.1 The BNG report (see Appendix 4c) presents the results of a Biodiversity Net Gain Calculation using the DEFRA Net Gain Metric 4.0 for the proposed development, which has concluded that, after completion, the proposed development will result in a net gain of 22.58 habitat units, 10.11 hedgerow units and 0.74 watercourse units,

equating to a biodiversity net gain of 25.14% for habitat units, 229% for hedgerow units and 50.38% for watercourse units.

## 8.5 Conclusions and recommendations

- 8.5.1 The EclA concludes that, with the proposed mitigation and restoration measures in place, the proposed development will have no unacceptable adverse impacts on the identified key ecological receptors or other ecological receptors: during the development phase the mitigation measures have been assessed as limiting the residual impacts to negligible to minor adverse, whilst the residual effects after restoration have been assessed to be either neutral or minor beneficial.
- 8.5.2 The BNG report findings confirm that after restoration the proposed development provides enhanced green infrastructure provision. The proposed scheme results in a calculated biodiversity net gain that is significantly higher than the 10% requirement.
- 8.5.3 The Arboricultural Constraints Appraisal report (see Appendix 5) has classified all but one of the trees on or near the site to be of Category/grade 'C1', the other tree being classified as 'U' – in such a poor condition that it is not worthy of retention. Trees of Category C have been assessed as being of low quality and value and will usually not be retained where they would impose a significant constraint on development, although young trees with a stem diameter of less than 150mm should be considered for relocation.

## 9. SOILS AND AGRICULTURAL LAND QUALITY

### 9.1 Introduction

9.1.1 Land Research Associates has prepared a report on the soil resources and agricultural quality of the site, issued in February 2023, which is presented in Appendix 6, and the main findings are summarised in the sections below. The report is based on a brief review of published sources of soil classification and agricultural land quality information and a detailed soil sampling survey of the site.

9.1.2 The assessment describes the baseline agricultural and soil quality and evaluates the importance of the soil resource at the site as well as the recommended methods for its handling, stockpiling and restoration.

### 9.2 Baseline conditions

9.2.1 The Provisional Agricultural Land Classification mapping from the 1970s shows most of the land as Grade 2 with a small area on the western margin as grade 3.

9.2.2 A detailed soil resource and agricultural quality survey was carried out in December 2022 based on hand auger sampling to up to 1.2m depth on a 100m grid across the site. Soils developed on sand and gravel deposits occur across most of the site, comprising freely-drained loamy sands or sandy loams but groundwater affected in hollows, whilst soils developed on alluvial deposits the lower ground in the south of the site, comprising silts affected by groundwater.

9.2.3 During the survey, the agricultural land classification at each location was classified into grades using the MAFF 1988 system, which also takes account of available climatological data for the site. Land of grades 2, 3 and 4 have been identified on the site. The grade 2 land, which classifies as best and most versatile (BMV), comprises the areas of higher ground with freely drained soils formed on the sand and gravel (21% of the land), and is assessed to have some limitations due to slight droughtiness, susceptibility to windblow and localised waterlogging.

9.2.4 The subgrade 3a (also BMV) land, forms 12% of the land area and occurs in the south-west and some other areas. It is assessed to have wetness due to imperfect subsoil drainage and winter flooding, which slightly limits arable cropping of the land. The subgrade 3b (non-BMV) land forms 52% of the site and occurs in the east. Its poor drainage limits arable cropping more significantly due to wetness and poor drainage.

9.2.5 The grade 4 land forms less than 1% of the site area, whilst other land such as the fishponds form 14% of the area.



9.2.6 Four soil resources have been identified on site: two topsoils (TS1 & TS2) and two subsoils (SS1 & SS2). Both topsoil resources are ranked as high quality and should be excavated and stockpiled separately from each other, with care taken to prevent windblow. The SS1 subsoil occupies much of the site and is considered a moderate quality resource for reuse, but may have value as a mineral resource and could be replaced in restoration by suitable material, whilst SS2 is a high quality resource located in the south of the site.

### 9.3 Soil management and potential impacts and effects

9.3.1 The sandy soils are resistant to damage when wet and can be moved in a range of conditions other than during or after heavy rain. They are susceptible to windblow and handling should be avoided in windy conditions during drier parts of the year (June to August). Stockpiles will be formed no more than 3m high for topsoil and 5m for subsoil, constructed using excavator or bulldozer, and sown with grass.

9.3.2 In the restoration, topsoil and subsoil will be emplaced to a minimum thickness of 300mm each and spread by loose tipping, to reinstate the ground levels back/close to original.

### 9.4 Conclusions

9.4.1 Careful management and handling of the soil resources is proposed to avoid significant residual impacts after restoration and completion of the development. Overall, the impact of the proposed development on soil resources is assessed as negligible/neutral as it will conserve and re-use all of the soil resources available within the site.

9.4.2 It is proposed that the identified duck pen area and duck breeding operations are to be removed as part of the long-term restoration of the site, which will be replaced by the proposed leisure lodge scheme. The land area comprising the leisure facility is slightly smaller than the duck pens thus no net loss of agricultural land is assumed as part of the scheme.

9.4.3 The residual impact effects on agricultural land quality after restoration are therefore considered minor beneficial, and therefore the impact effects of the proposed development are not considered significant.

## 10. GROUNDWATER ENVIRONMENT

### 10.1 Introduction

10.1.1 Hafren Water has prepared a Hydrogeological Impact Assessment (HIA) report on the site and the proposed development, issued in June 2023, which is presented in Appendix 7, and the main findings are summarised in the sections below.

10.1.2 The HIA has assessed the water environment baseline via review of existing published data and field observations. The potential effects of the proposed development on the baseline have been assessed and mitigations have been proposed where appropriate.

### 10.2 Baseline conditions

10.2.1 The Site lies in an extensive area of very low relief on the Fylde coastal plain. The gently undulating topography generally declines towards the northern and southern site boundaries. Average annual rainfall is 890mm, ranging between 44-103mm monthly average.

10.2.2 Drainage in the area is dominated by ditches and dykes, the largest of which are 650-950m north-west or north of the site and drain north-northwestwards with floodgated outlets on the coast. The site is on the catchment divide of the rivers Wyre and Lune. Conditions in the field drains varies seasonally, many being dry in the summer or flooded in the winter/spring.

10.2.3 The waterbodies on or immediately adjacent to the site were formed by mineral extraction and are unlined, although one of the fishing lakes may be located within made ground. Other waterbodies in the area often relate to subsidence of historical salt workings.

10.2.4 Two statutory sites of international importance are located within 2km of the site: Morecambe Bay Ramsar site (2km north and 3km west) and Morecambe Bay SAC (north). The coastline and the banks of the River Wyre Estuary are designated as the Wyre Estuary Sites of Special Scientific Interest (SSSI). There are no Local or National Nature Reserves within 2km of the site boundary.

10.2.5 There are a number of historical landfill sites within 2km of the site boundary, but no permitted landfills. There is also an area adjacent to the west of the site which was worked for mineral and there is no record of the materials used to backfill it, although the 2021 borehole investigation indicated made ground to around 4m depth, comprising black glassy material with occasional slag, capped with 0.6m of soil and subsoil.

10.2.6 The site is underlain by superficial deposits comprising an elongate raised storm beach deposit (the mineral), surrounded by tidal flat deposits, which extend well beyond the site. The mineral deposits are between 1-6m thick, average 2.7m, and overlie tidal flat deposits of sandy silt, which in turn overlie glacial till. The superficial materials overlie Sherwood Sandstone strata.

10.2.7 The Sherwood Sandstone underlying the site is classified as a Principal Aquifer, providing a regionally important groundwater resource, however, it is completely confined by the glacial till deposits, which are over 20m thick. The site lies within an outer source protection zone (SPZIII) for the Sherwood Sandstone, with no SPZI or II within 10km. The storm beach deposits are classified as Secondary 'A' aquifer, whilst the tidal flats deposits are classified as non-aquifers. The underlying glacial till is classified as Secondary Undifferentiated Aquifer. Site groundwater levels are around 0.3-2m below ground level (around 4.3mAOD to 5.6mAOD). Groundwater flow is mainly eastwards.

10.2.8 The sands and gravels are partially saturated, with groundwater anticipated to flow radially out from the deposit, draining to the land drains. The drains flow northwards, discharging to Cocker's Dyke Drain or Wheel Foot Watercourse, with outward flow to the sea controlled by floodgates. The fishing lakes are considered hydraulically connected to the sand and gravel, including the lake set within made ground. The underlying tidal flat deposits and glacial till are effectively non-aquifers which form a base to the active hydrogeological regime in the overlying superficial deposits. The superficial aquifer is therefore hydraulically isolated from the sandstone bedrock.

### 10.3 Potential impacts and effects

10.3.1 The mineral will be dug during the drier months in a series of phases using a wet dig for Phase 1, and active dewatering to enable dry working in the remaining phases. Water from dewatering will be allowed to settle in a sump and discharged to the on-site waterbodies. Excess water will be discharged to the field drain network. Water from a freshwater lagoon will be used for dust suppressions, wheel-wash and for mineral processing.

10.3.2 The radius of drawdown due to dewatering in Phases A and 2-4 has been estimated as around 65m-635m from the working void, with a 'most likely' value of 200m, however the extent of drawdown is expected to be less due to working in smaller phase areas with ongoing restoration, coupled with (if needed) the placement of tidal flats clay/silt materials against the excavation sides. The 'most likely' dewatering volume has been calculated as 1,250 m<sup>3</sup>/day. Any offsite discharge will be limited to

greenfield run-off rate, and internal flow balancing may be required to ensure these are not exceeded. Offsite discharge will also be subject to tide levels in Morecambe Bay, with none allowed during times of flooding.

- 10.3.3 Considering the proposed operational mitigation measures (campaign extraction during drier months, phased working, ongoing restoration, potential placement of silt against excavation sides) the potential magnitude of impact on surface water levels and flows within nearby waterbodies and groundwater levels and flows in the superficial strata due to dewatering is assessed to be negligible with no significant effects.
- 10.3.4 The water management proposals are designed to ensure that the magnitude of impact on the surface water quality of the adjacent field drains due to suspended solids will be 'negligible', with no significant effects. Similarly, spill kits will be available on site to deal with any accidental chemical/fuel releases within the quarry, and the potential impact on surface water and groundwater quality due to chemical contamination is therefore considered to be 'negligible'.
- 10.3.5 The underlying Sherwood Sandstone is protected and isolated by the tidal flats and glacial till deposits and therefore no impacts will occur to groundwater in this aquifer.
- 10.3.6 The designated statutory sites are over 1.5km downstream, outside the predicted radius of influence of the dewatering, and offsite discharges will be limited to current greenfield rates, therefore the potential impacts on these are considered negligible, with no significant effect.
- 10.3.7 After completion of the proposed restoration to original ground level using inert fill, which will include several water bodies, the surface water and groundwater regimes in the vicinity of the site are assessed to remain unaltered from current baseline conditions. The sensitivity of the receptors is considered 'Low' to 'Medium', with 'Negligible' impact magnitude, and therefore the significance of effect is considered 'None' to 'Minor', and no significant residual impact effects have been identified.
- 10.3.8 The imported inert fill will be subject to an Environmental Permit setting stringent acceptance criteria, mitigating the risk of unacceptable material and therefore the impact effects on groundwater quality post-completion are also assessed as negligible.

#### 10.4 **Conclusions**

- 10.4.1 Industry best practice pollution control measures will be employed at the site and will include provision of spill kits and bunded fuel tanks to mitigate the potential risk and impact effects of small-scale accidental release of chemicals or hydrocarbons from mobile plant/equipment or other chemicals used on site.
- 10.4.2 The HIA report has also considered potential cumulative impacts associated with the proposed development and other developments in its vicinity. No sites were identified as requiring consideration in assessing any cumulative effects on the water environment.
- 10.4.3 The HIA report has assessed the residual impact effects of the proposed development on the groundwater environment as negligible/neutral, with potential minor adverse temporary impact effects occurring during the operational phase being confined to the immediate vicinity of the site. These impact effects are therefore assessed as not significant.

## 11. FLOOD RISK & SURFACE WATER

### 11.1 Introduction

11.1.1 Hafren Water has prepared a Flood Risk Assessment (FRA) report on the site and the proposed development, issued in June 2023, which is presented in Appendix 8, and the main findings are summarised in the sections below.

11.1.2 The return period of the fluvial and rainfall events considered is 100 years plus an allowance for climate change. The FRA considers the likelihood of flooding, the associated hazards and the vulnerability of the flood receptor.

### 11.2 Baseline conditions

11.2.1 Much of the relevant baseline information has been dealt with in Section 10 above. Environment Agency (EA) information shows that much of the site is located within Flood Zone 3 (1 in 100 or greater annual probability of river flooding or 1 in 200 or greater probability of sea flooding) and is completely surrounded by Flood Zone 3 areas. The higher ground within the site and nearby is classified as Flood Zone 2 or 1. There are no records of historical flooding affecting the site.

11.2.2 The coastal peninsular contains a network of embankments, revetment systems and sea walls which protect most of the area from flooding up to a standard of protection of between 1 in 75-year and 1 in 200-year annual probability events. Flood alerts are available for fluvial flooding from the River Wyre, coastal flooding from Cockerham to Fleetwood and for flooding from nearby pumped watercourses (Wheelfoot Watercourse, Cocker's Dyke and Middle Dyke).

### 11.3 Potential impacts and effects

11.3.1 The proposed mineral extraction is considered 'water compatible' in accordance with NPPF and PPG and therefore appropriate to be located within Flood Zone 3.

11.3.2 EA flood modelling and mapping for fluvial events indicates that the northern edge of the site is exposed to flood risk from a 1 in 100 year plus 70% climate change adjusted event. The land south of this is currently at very low to no risk of fluvial flooding, including the area that will contain the quarry office and fixed plant. In relation to tidal flooding, the EA indicates that the coastal flood defences provide protection during a 1 in 200 year event with 970mm sea level rise allowance, and against 1 in 100 year events with 70% climate change adjustment. Modelling of a breach in the coastal defences suggests flooding to <0.5m would occur in the northern edge of the site. Mineral extraction will lower the ground levels on the site, removing the natural flood

barrier formed by the higher ground in the site, and the FRA recommends that the potential increase in fluvial flood risk should be mitigated within the development.

- 11.3.3 The risks of surface water flooding, groundwater flooding and flooding from sewers and drains have been assessed as negligible to low, with no mitigation considered necessary over and above the operational procedures that will be implemented during the mineral extraction.
- 11.3.4 The surface water drainage strategy will use the excavation voids to provide temporary attenuation storage during and following storm events. In the event that discharge to the local drainage network is required, this will be restricted to greenfield run-off rates, and the storage capacity and depth of the quarry voids are sufficient that overflow to surrounding areas will not occur.
- 11.3.5 Following restoration, the site will be reinstated to close to original ground levels generally and all quarry-related above-ground structures will be removed, therefore run-off rates will be similar to greenfield conditions and no active water management will be required. A number of open water and low-lying wetland features will be formed, which will overflow to the existing ditch network, away from sensitive receptors. Agricultural land use will not be sensitive to occasional shallow flooding.
- 11.3.6 As a result, the proposed development post-restoration is assessed to result in negligible impact effects: the fluvial flood risk will not be altered from the current condition. The FRA report therefore concludes that flood risk mitigation measures are only required during the operational phase. During the operational phase it is assessed that the proposed water management system and available quarry void space will prevent surface water overflow to external areas, and the existing coastal defences provide protection against a 1 in 200 year event, however, as a precautionary measure, the FRA recommends that the site adopts an Emergency Plan that sets out flood warning and evacuation procedures, routes and dry refuge.

#### 11.4 **Conclusions**

- 11.4.1 With the recommended mitigations in place, the proposed development and restoration is assessed as having negligible/neutral impact effects on flooding risk during the operational phase and after completion and restoration, and therefore the impact effects are not considered significant.

## 12. NOISE

### 12.1 Introduction

12.1.1 Vibrock has prepared a noise assessment report on the site and the proposed development, issued in March 2023, which is presented in Appendix 9, and the main findings are summarised in the sections below.

12.1.2 The work has included a site inspection and baseline sound level monitoring undertaken in October 2021 to establish the baseline sound levels experienced at noise-sensitive properties in the vicinity of the site. Assessment of potential impacts at the identified properties has been made by comparison of predicted quarry noise levels with relevant guidance and criteria and suitable mitigation measures have been recommended where necessary.

### 12.2 Baseline conditions

12.2.1 Baseline sound levels were measured using equipment set at 1.2-1.5m height with no vertical reflective surfaces within 3.5m, at locations selected to represent existing noise-sensitive properties close to the proposed quarry operations, on a day with west-northwesterly windspeeds of 2-3m/sec.

Location	Background noise level Average L <sub>A90</sub> dB
Old Nickson's Cottage	40
Whinmore Fold	40
Woodlands	40
Red Lea	40
Bourbles Farm	40
Crossing Cottage	38
Greenacres	47
Lyndale Farm	47
Mytax/New England Cottage	43
Hillfield House/Pointer Farm	42
The Beeches	42
Ourome	37



### 12.3 Potential impacts and effects

12.3.1 At the 12 noise-sensitive locations above, predictions have been made of the noise levels arising from the proposed development during short-term, more noisy operations and during normal operations based on the proposed plant equipment and activities.

12.3.2 The PPG permits a temporary daytime noise limit of 70dB(A)  $L_{Aeq, 1h}$  (free field) for periods of up to 8 weeks in a year to facilitate short-term activities such as essential site preparation, restoration, soil-stripping, and the construction and removal of soil mounds and spoil heaps. The report summarises the predicted noise levels from short-term activities at the site, as tabulated below, which indicates that they are expected to remain below the temporary daytime limit of 70dB recommended within PPG-Minerals.

Assessment Location	Predicted worst-case site short-term noise level dB $L_{Aeq, 1h}$ (free-field)	Difference between Site Noise and 70 dB(A) Limit
Old Nickson's Cottage	52	-18
Whinmore Fold	57	-13
Woodlands	68	-2
Red Lea	68	-2
Bourbles Farm	67	-3
Crossing Cottage	48	-22
Greenacres	47	-23
Lyndale Farm	49	-21
Mytax/New England Cottage	68	-2
Hillfield House/Pointer Farm	54	-16
The Beeches	54	-16
Ourome	68	-2

12.3.3 In relation to predicted noise during normal operations the report provides the tabulation overleaf.

Assessment Location	Predicted worst-case site noise level dB LAeq,1h (free-field) – Normal Operations	Background noise level	Difference between site noise and background level	Difference between site noise and 55dB(A) limit
Old Nickson's Cottage	47	40	+7	-8
Whinmore Fold	48	40	+8	-7
Woodlands	54	40	+14	-1
Red Lea	54	40	+14	-1
Bourbles Farm	53	40	+13	-2
Crossing Cottage	47	38	+9	-8
Greenacres	46	47	-1	-9
Lyndale Farm	48	47	+1	-7
Mytax/New England Cottage	52	43	+9	-3
Hillfield House/Pointer Farm	51	42	+9	-4
The Beeches	50	42	+8	-5
Ourome	47	37	+10	-8

12.3.4 The predicted potential noise levels from normal operations at the site could exceed the background level by more than 10dB at Woodlands, Red Lea and Bourbles Farm, however, the proposed screening bunds reduce the potential levels to within the maximum daytime limit of 55dB. Activities that might generate noise levels in excess of 10dB above background noise levels will be very limited in duration, however. This, coupled with the proposed campaign extraction, will result in significant periods when only very minor operations are taking place near to sensitive noise receptors/residential properties.

#### 12.4 Conclusions and recommendations

12.4.1 The noise assessment report has concluded that the potential effects of the development in terms of noise impact are at an acceptable level and are not significant.

12.4.2 The impact magnitude of the short-term and normal operational noise at the various receptors is therefore assessed as low. The receptors are mostly high sensitivity residential properties, and therefore the impact effects are assessed as minor adverse, but are based on conservative worst-case values.

12.4.3 A variety of best practice noise control measures are detailed in the report and will be implemented to minimise noise impacts:

- Strict adherence to stated operating hours
- All plant and equipment to comply with statutory noise emission requirements
- Audible reversing warning systems on mobile plant and vehicles should be of minimum noise impact
- All machinery regularly inspected and maintained, silencers fitted where appropriate
- Drop height of materials minimised
- Start up plant and vehicles sequentially, warm up/idle away from residential properties
- Avoid unnecessary horn usage, sharp braking and engine revving
- Switch off equipment not required or throttle down to minimum. Covers, panels and enclosures to be kept closed when equipment in use
- Plant that produces directional noise to be oriented away from noise sensitive receptors where practicable
- Site access road and haul roads to be kept clear and well maintained, avoiding steep gradients
- Operatives to be trained in techniques to minimise site noise and supervised to ensure best working practices are implemented

## 13. DUST AND AIR QUALITY

### 13.1 Introduction

13.1.1 Vibrock has prepared an air quality assessment report on the site and the proposed development, issued in March 2023, which is presented in Appendix 10, and the main findings are summarised in the sections below.

13.1.2 The work included a site inspection undertaken in September 2019 and dust monitoring at five locations around or near the site. Assessment of potential impacts of emissions has been made by comparison of predicted quarry emission levels with relevant guidance and criteria, and suitable mitigation measures have been recommended where necessary. The report also contains an analysis of the human health impacts of dust including silica rich particles, as required by LCC in its scoping response.

### 13.2 Baseline conditions

13.2.1 Dust generation and dispersal is dependent on weather conditions. The mean wind direction is mainly from around the west or east and south-east, and weather data indicates about 158 dry days per year in the site area. Taking account of working days and site hours, dry days occurring during operational periods reduce to 112 dry days per year. Dust is not likely to be carried by winds of less than 5.6m/sec, and the report assesses that the likelihood of dust occurrence will be around 22 days per year.

13.2.2 There is only one Designated Air Quality Management Area (AQMA) in the Wyre Council area, Chapel Street – designated due to NO<sub>2</sub> exceedances, and is therefore not relevant to this study.

13.2.3 An indication of the likely existing levels of PM<sub>10</sub> and PM<sub>2.5</sub> particulates at the site has been obtained from the relevant 1km squares of the Automatic Urban and Rural Network for the nearest residential receptors to the development site. This indicates baseline dust concentration ranges of between 8.56-8.90µg/m<sup>3</sup> for PM<sub>10</sub> and 5.52-5.68µg/m<sup>3</sup> for PM<sub>2.5</sub> particles for 2023, with slight reductions anticipated over the period to 2030.

13.2.4 Dust monitoring has been undertaken during the study at five locations to determine background dust levels in terms of effective area coverage percentage (EAC%) per day. The dust deposition rates recorded varied between 0.3-0.4 EAC% per day (typically classified as 'low' rate) in all but one case, which recorded 0.7 EAC% per day ('medium' rate). Existing dust levels are mainly influenced by road traffic and agricultural activity.

### 13.3 Potential impacts and effects

13.3.1 The report reviews the proposed quarrying operations that have potential to generate dust emissions: soil stripping, mineral extraction and transportation, mineral processing, and restoration activities. The magnitude of these emissions has been assessed in accordance with Institute of Air Quality Management (IAQM) guidance as small to medium.

13.3.2 For a site operation to be dusty it must involve physical disturbance, there must be a wind of sufficient strength to raise dust blowing in the direction of a receptor property, and there must be a failure of dust control measures. Most dust particles generated by minerals operations are greater than 30µm and are largely deposited within 100m of source, the smaller proportion of finer particles between 10-30µm generated could travel around 250-400m, whilst the small proportion of finest particles <10µm may travel up to 1km. The report presents an assessment of the dusts risks associated with the development in accordance with IAQM guidance, the results of which are summarised in the table below.

Assessment Location	Categorisation of receptor distance from dust source and frequency of dusty days	Estimation of dust impact risk	Magnitude of dust effect
Old Nickson's Cottage	Intermediate / moderately frequent	Low Risk	Slight adverse
Whinmore Fold	Close / moderately frequent	Low Risk	Slight adverse
Woodlands	Close / very frequent	Medium Risk	Moderate adverse
Red Lea	Close / very frequent	Medium Risk	Moderate adverse
Bourbles Farm	Close / very frequent	Medium Risk	Moderate adverse
Crossing Cottage	Intermediate / very frequent	Medium Risk	Moderate adverse
Greenacres	Intermediate / moderately frequent	Low Risk	Slight adverse
Lyndale Farm	Intermediate / moderately frequent	Low Risk	Slight adverse
Mytax/New England Cottage	Close / very frequent	Medium Risk	Moderate adverse
Hillfield House/Pointer Farm	Intermediate / frequent	Low Risk	Slight adverse
The Beeches	Intermediate / moderately frequent	Low Risk	Slight adverse
Ourome	Close / frequent	Low Risk	Slight adverse

13.3.3 The PM<sub>10</sub> dust assessment presented in the report concludes that the highest background PM<sub>10</sub> concentrations are 8.9µg/m<sup>3</sup>, which falls well below the IAQM threshold of 17µg/m<sup>3</sup> below which PM<sub>10</sub> emissions from a mineral site can be screened

out of the assessment, and therefore that PM<sub>10</sub> levels from the proposed development are not likely to exceed the annual Air Quality Objectives.

13.3.4 IAQM guidance indicates that for quarries most particles smaller than PM<sub>10</sub> will be in the coarse sub-fraction PM<sub>2.5-10</sub>, rather than PM<sub>2.5</sub>, and will make up a small proportion of the PM<sub>10</sub> particles. On this basis, the report assesses the worst-case projected concentration of PM<sub>2.5</sub> of 6.18µg/m<sup>3</sup> during site operations, which complies with the 2020 annual mean criterion of 20µg/m<sup>3</sup> PM<sub>2.5</sub>, and therefore the report concludes that PM<sub>2.5</sub> levels from the proposed development would not exceed the annual Air Quality Objectives.

13.3.5 The report also assesses potential for respirable crystalline silica (RCS) emissions from the proposed development. No cases of silicosis have been documented among members of the general public in the UK, indicating that environmental exposures to silica dust are not sufficiently high to cause this occupational disease. The sand and gravel production proposed at Bourbles Quarry would involve the processing of a damp raw material through a wet washing process to produce a finished material which is also inherently damp, limiting the potential for community exposure. The quarry operator will be required to routinely monitor the exposure of its employees to RCS through regular occupational health monitoring and air quality and dust hazards from quarries are stringently controlled by regulatory controls and implementation of site-specific dust control measures. The report therefore concludes that any exposure to RCS beyond the site boundary is unlikely.

13.3.6 The report also concludes that potential air quality impacts from traffic associated with the quarry development are not considered to be significant.

#### 13.4 Conclusions and recommendations

13.4.1 The predicted dust levels and dust impact effects arising from the proposed development operational phase without mitigation measures have been assessed as moderately to slightly adverse. However, through implementation of the dust mitigation measures (as recommended in the air quality report and considered standard practice in the UK quarry industry) the residual magnitude of dust effects is assessed to be negligible.

13.4.2 Unavoidable dust and air quality effects will be controlled, mitigated or removed at source (as required by relevant planning policy) via the following industry standard best-practice dust control measures that will be implemented during the operational phase of the development:

- Compliance with any dust control measures imposed in the planning conditions, taking current and forecast weather conditions into account
- Development of a dust management plan approved by the Mineral Planning Authority
- Training of site personnel in potential sources of dust and mitigation measures
- Regular visual inspections on site and within the local road network to identify and deal with any dust sources
- Maintenance of a dust complaints log, with investigation and remediation as necessary
- Suspension of dust generating activities in the event of a temporary failure of dust mitigation measures
- Construction of screening bunds to protect properties identified as having moderate adverse dust effects
- Dust suppression on haul roads as required via tractor and water bowser
- Use of road sweeper on the site access road and road network near the site entrance
- Stockpile areas to be within shielded bays
- Wind screening of the plant area, and inspected regularly to ensure its effectiveness

## 14. CULTURAL HERITAGE AND ARCHAEOLOGY

### 14.1 Introduction

14.1.1 At the scoping stage, LCC confirmed that archaeology could be scoped out of the Environmental Statement (ES) and EIA, and could be dealt with through a desk study. Accordingly, Wardell Armstrong has prepared a Historic Environment Desk-Based Assessment report, issued in April 2023, which is presented in Appendix 11 for information.

14.1.2 As archaeology has been scoped out of the EIA by LCC, no detailed discussion of cultural heritage and archaeology is presented in this ES report. The main findings of the report are summarised below.

### 14.2 Potential impacts and effects

14.2.1 The quarry excavations will permanently remove all known, and any as yet unknown, archaeological remains that may be present, and therefore the potential impact on archaeology is high. However, the site is considered to have a low potential to contain significant archaeological remains.

14.2.2 The proposed development may have a minor adverse impact on the setting of Bourbles Farm and Bourbles Farm Barn, although these heritage features are considered to be of low significance.

14.2.3 The report also identifies three historic hedgerows (Assets 18, 27 and 30) which remain on site, although only partially in the case of Asset 18. These hedgerows are considered of 'Medium' heritage significance. These hedgerows are located around parts of the perimeter of the site and will therefore largely not be impacted upon by the proposed development, although short sections of Assets 18 and 27 require removal to facilitate access to the development site and for the mineral extraction.

14.2.4 As only short sections of hedgerow Assets 18 and 27 will be removed (and Asset 27 will be reinstated), whilst Asset 30 will be unaffected, the magnitude of impact is considered to be 'minor', with the magnitude of impact being 'slight'. Some form of mitigation may be necessary in relation to the asset (Asset 18) that will be left affected post-restoration, and this requirement will be assessed in consultation with the Local Planning Authority archaeologist.



## 15. PUBLIC RIGHTS OF WAY

### 15.1 Introduction

15.1.1 The LCC Scoping Opinion indicated that consideration of footpaths and Public Rights of Way (PRoWs) which traverse and abut the site is required within the ES.

### 15.2 Potential impacts and effects

15.2.1 Public Footpaths FP0203028 runs through the application area, from Bourbles Lane through the fishing lake area, trending south-westwards where it eventually joins Gaulters Lane, towards Preesall. Bridleways BW0203021 and BW0203026 effectively form Bourbles Lane, trending from the A588 in the south-east into the village of Preesall to the north-west of the site. These PRoWs are shown in Figure 2 above together with other local footpaths that do not cross through or lie directly adjacent to the site.

15.2.2 As part of the proposed mineral working scheme, it is proposed to provide a gated crossing at the point where the proposed haul road access through the lake areas into the Phase 1 part of the site rather than diverting the Footpath around the development. The footpath will be fenced through the fishing lakes with the gate arranged such that use of the footpath will be unimpeded and the trace of the footpath will be unchanged. The proposed fencing will ensure that the footpath will be at least 2m wide to ensure continued and unobstructed access is maintained at all times.

15.2.3 As part of the proposal to excavate and transport the mineral to the processing plant in the central part of the site, there will be a requirement for two crossing points on Bourbles Lane. The lane provides vehicle access to a number of residential properties and is also classified as a bridleway. The crossing points are shown in Plan ES23-3, located between Phase 2 and the lakes area and also to the east of Bourbles Lane just south of the existing duck pens.

15.2.4 Potential impacts of the development on footpaths and PRoWs have been assessed within the landscape and visual impact assessment (see Section 7 above). The study concluded that these medium sensitivity receptors would experience medium adverse impact during to the operational phase of the development, which were assessed to result in moderate adverse impact effects, which were not considered significant. After restoration of the site, the visual impacts to footpath users adjacent to the site were assessed as neutral to moderate beneficial.

15.2.5 The potential noise and dust impact effects of the operational phase of the development on users of footpaths and PRowWs in the vicinity of the site are not considered within the noise and dust assessments (see Sections 12 and 13 above) as these assessments focus on residential receptors, where the duration of exposure to these impacts, where they occur, is longer and the exposure frequency higher.

15.2.6 Given the low frequency and very short duration of the exposure to noise and dust arising from the operational phase of the development that will be experienced by users of footpaths, PRowWs in the vicinity of the site, the receptor sensitivity is assessed as low and the impact magnitude as minor, and therefore the impact effects are assessed as negligible to minor temporary adverse and are therefore not considered significant.

### 15.3 Conclusions

15.3.1 The potential impact effects of the proposed development on the identified PRowWs and their users, are assessed as negligible to minor adverse across a variety of potential impact sources during the operational phase of the development, however these impact effects are not considered significant.

15.3.2 With reference to the main planning policy tests relating to Public Rights of Way, it is considered that the proposed development protects existing PRowWs on or near the site, and whilst route FP0203028 is affected by the proposals as it crosses the site haul road during Phase 1 but is not required to be diverted.

15.3.3 Once the site has been fully restored, the assessed residual impact effects reduce to negligible, and in the area of the northern part of the site, which is to be restored to a mixture of habitats with enhanced biodiversity, the residual visual impact effects have been assessed as minor to moderate beneficial in terms of visual amenity.

15.3.4 The operational and residual impact effects of the proposed development on footpaths, PRowWs, and their users are therefore not concluded to be significant.

## 16. GROUND CONDITIONS AND GEOTECHNICAL

### 16.1 Introduction and Methodology

16.1.1 An assessment of the geology and geotechnical impacts of the proposed operations has been carried out by Greenfield Environmental that has included two phases of exploratory mineral investigation borehole drilling, as shown in Plan ES23-2. The excavation faces in the sand and gravel will be retained at a safe angle in compliance with the Quarries Regulations 1999.

### 16.2 Baseline Conditions

16.2.1 The site is underlain by superficial deposits, comprising an elongate raised storm beach deposit (the mineral), surrounded by tidal flat deposits which continue well beyond the site boundary. The tidal flat deposits overlie glacial till which in turn overlies Sherwood Sandstone strata. As part of the ES work, an Enviro+Geo Insight report was commissioned from Groundsure in 2021 and is presented in Appendix 12, whilst historical Ordnance Survey maps obtained as part of the report are presented in Appendix 13.

16.2.2 The Groundsure report uses a variety of searches to identify any past or current industrial land uses, waste or landfill sites, licensed pollutant releases or discharges, and/or pollution incidents on or within 500m of the site. The most pertinent features are discussed in the section below.

16.2.3 Based on the historical Ordnance Survey mapping the report has identified (Section 18, page 94) a number of areas in the site vicinity that have been worked for mineral and have then been infilled or partially infilled (between the 1930s-60s), in particular around the most north-westerly of the fishing lakes and the field to its south. These areas of worked ground are not identified in the report as having been licensed and are not listed as known historical landfills, and therefore it is assumed that the backfilling was not subject to any regulatory controls and there are no records of the types of materials used for the backfilling.

16.2.4 The Groundsure report indicates that there are four records of licensed discharges of sewage to the surface water drain network, 230-350m south or south-west of the site, the most recent of which is still current, relating to combined sewer storm overflows, and two recorded pollution incidents 420-440m south of the site resulting in minor impact to surface water in 2001 and 2003. These features are not considered significant in terms of the proposed development.

- 16.2.5 The storm beach deposits are classified as a Secondary A aquifer whilst the tidal flat deposits are classed as unproductive. The underlying Sherwood Sandstone bedrock is classed as a Principal Aquifer, however it protected and isolated from the overlying storm beach aquifer by the thickness of the tidal flat deposits and glacial tills that are present between the base of the storm beach deposits and the Sherwood Sandstone. The storm beach deposits aquifer is classed as being of high vulnerability. There are no groundwater, surface water or potable water abstractions within 2km of the site, whilst the outer edge of a groundwater source protection zone is present around 460m east of the site.
- 16.2.6 The exploratory mineral borehole drilling has proved that the mineral deposits are between 1-6m thick (thickest in the west of the site), averaging 2 to 3m, and overlie tidal flat deposits of sandy silt and clay. Within the extraction areas identified, it is estimated that around 515,000 tonnes of storm beach sand and gravel is present that can be extracted to provide a range of medium to coarse sharp sand and 10mm and 20mm gravel products for use as concreting aggregates, and 40mm gravel material with potential uses in drainage.
- 16.2.7 Most of the boreholes proved the presence of mineral, although a few boreholes were barren, and one borehole (borehole BFP 21-18), located in an area previously worked for mineral, encountered made ground to 3.9m depth, with no mineral remaining. The made ground was described as black, angular, coarse grained glassy grit with occasional lumps of slag.
- 16.2.8 All of the boreholes in which mineral was present encountered overburden materials overlying the mineral. These mostly comprised 0.2-0.7m of topsoil/subsoil, however, in a few exploratory boreholes (boreholes BFP 21-11, -12 and -23) additional layers of overburden were present beneath the topsoil/subsoil, extending to 2.3-3.4m depth above the mineral, comprising silt and occasionally peat. All the boreholes drilled were terminated in the tidal flat deposits sandy silts and clays which underlie the mineral.
- 16.2.9 The monitored groundwater levels, for the main part of the year when the mineral extraction work would take place, were 0.8m-1.4m below ground level - generally around 0.5m to 1.0m below the top of the mineral deposit.

### 16.3 Assessment of Potential Impacts

- 16.3.1 A geotechnical assessment has been undertaken of the proposed sand and gravel excavation and the proposed restoration scheme back to original ground levels using imported backfill and soils retained as part of the stripping operations.
- 16.3.2 Analysis of the excavation faces indicates that the Factor of Safety (FoS) for cut face angles up to 1v in 2h is sufficiently high to ensure that the temporary extraction slopes are stable for the short period of time between excavation and backfilling operations. The results indicate that the proposed side slopes are appropriate for the proposed development.
- 16.3.3 The faces at the boundaries of proposed mineral extraction, together with the faces excavated adjacent to the stand-off to the gas main and water pipe that trend through the central part of the site, are required to be stable over a short period of time only: they are not required to be stable in the long term as they will be backfilled against progressively as each phase is developed.
- 16.3.4 As the side slopes will be backfilled against within weeks of excavation, there is a significant reduction in potential for any face failure to occur during the restoration operations. The Factor of safety (FoS) for the designed slopes in the sand and gravel and the overburden confirms that the proposed workings will have no significant impact on the geological environment.
- 16.3.5 The mineral extraction will involve wet excavation below the water table in Phase 1 and dry excavation with dewatering in the other phases. The water table is around 0.8-1.4m below existing ground levels. The mineral is 2.3m thick on average, with an average cover of overburden 0.6m thick, suggesting average depths of excavation of 2.9m, extending around 1.5-2.1m below the general groundwater level.
- 16.3.6 Due to the proposal to wet dig the Phase 1 area, the drawdown of the groundwater levels in the surrounding area is not expected to be significant, either in terms of depth or lateral extent of the drawdown. In the remaining phases the mineral excavations will be fully dewatered, which the Hafren Water HIA report (see Section 10 and Appendix 7) indicates is 'most likely' to have a radius of influence (drawdown) of 200m beyond the working areas, although the report notes that in practice the drawdown radius is likely to be smaller because the phase areas are to be worked on a campaign basis and backfilled progressively, thereby reducing the size of any open excavation.

16.3.7 The drawdown of groundwater levels beneath the land in the vicinity of an active mineral extraction area is not expected to have any adverse geotechnical impacts on structures or houses within the drawdown area: a temporary drop in the groundwater levels within the sand and gravel deposits will not result in any significant subsidence as the mineral 'skeleton' of these materials is very rigid. In areas beyond the site boundary where the mineral is absent and tidal flat deposits are present, the tidal flat deposits are silts and clays and are of inherently very low permeability, and hence any groundwater drawdown will not extend into such areas.

16.3.8 The proposed dewatering operations for mineral extraction have the potential to draw in groundwater from this nearby backfilled land, although they will also draw in groundwater from undisturbed adjacent areas. This aspect has not been assessed in detail at this stage as there is no test data available, however the increased groundwater flow rates in the drawdown area is expected to result in dilution of any contaminant concentrations that may be present. The groundwater drawn into the excavations will be from all directions around the excavation, most of which are areas that have not previously been worked/backfilled, therefore resulting in further dilution of any contaminant concentrations that may be in groundwater drawn in from previously worked areas. The migration of any potential contaminants will also be subject to natural attenuation which will reduce any contaminant concentrations.

16.3.9 As noted in the Hafren HIA report (see Appendix 7), mineral extraction on a campaign basis during the drier part of the year will reduce the dewatering requirements due to lower groundwater levels during those times. In addition to this, where necessary the clay tidal flat materials underlying the mineral will be used to line sections of the excavation walls near previously worked areas.

16.3.10 This mitigation will minimise the radius of drawdown into adjacent areas, further reducing the dewatering requirements by reducing the volume of groundwater ingress overall. As a further benefit, this mitigation will reduce the proportion of groundwater drawn in from nearby previously worked areas. Monitoring and assessment of the groundwater both during operational dewatering periods and non-dewatering periods outside of the mineral working, will be carried out.

#### 16.4 Proposed Mitigation

16.4.1 No further mitigation measures are recommended over and above the mitigation included within the design of the scheme.

## 17. CUMULATIVE AND IN-COMBINATION EFFECTS

### 17.1 Introduction

17.1.1 The LCC Scoping Opinion does not specifically identify that the EIA/ES should assess the likelihood of cumulative and in-combination effects, however it is usual for EIAs to make some consideration of this. Cumulative and in-combination effects are those that are likely to result from the proposed development in combination with other projects and activities that are being, have been or will be carried out, including: existing completed projects; approved but uncompleted projects; ongoing activities; plans or projects for which an application has been made; and, plans and projects which are reasonably foreseeable.

17.1.2 Cumulative and in-combination impacts and effects can take three forms:

**Successive cumulative effects** - the impacts caused by the proposed development in conjunction with other developments that occurred in the past, present or are likely to occur in the foreseeable future

**Simultaneous cumulative effects** - the combined action of a number of different projects, occurring simultaneously with the project being assessed

**In-combination effects** - the combined action of different impact effects

### 17.2 Cumulative effects

17.2.1 *Landscape and Visual* –there are no proposed developments in the area of the site thus no additional impacts are assessed.

17.2.2 Ecology - There are no other operational or consented mineral operations close enough to the site to require consideration in relation to the cumulative effects on ecology. No in-combination effects on the key ecological features considered in the EclA were identified.

17.2.3 Hydrogeology - No other project sites in the vicinity of the development site were identified as requiring consideration in assessing any cumulative effects on the water environment.

17.2.4 Noise - There are no other operational or consented mineral operations close enough to the site to require consideration in relation to the cumulative effects of noise. It is considered that the removal of the duck breeding operations may have a positive impact on local noise levels.

17.2.5 Any potential simultaneous cumulative impact effects associated with the project and other nearby projects are concluded to be negligible and are therefore not considered to be significant.

17.2.6 In terms of potential successive cumulative impact effects, the site and its near vicinity has been subject to a significant history of successive mineral working and local landfilling thus the potential for successive cumulative impact effects is concluded to be negligible and is therefore not considered to be significant.

### 17.3 In-combination effects

17.3.1 The receptors screened for consideration of in-combination effects are the residential receptors in the immediate vicinity of the site, and land and soil resources. These receptors are potentially impacted by a number of potential impact effects, as summarised in the screening matrix below for the operational phase and completed development scenarios, based on the conclusions of the various assessments discussed in the preceding sections of the ES:

<b>Impact</b> <b>Receptor</b>	<b>Visual</b>	<b>Flood Risk</b>	<b>Noise</b>	<b>Dust</b>	<b>Traffic</b>	<b>Land-take</b>
<b>Residential (Operational Phase)</b>	Moderate to slight adverse effect	Negligible neutral effect	Minor adverse effect	Negligible neutral effect	Negligible neutral effect	N/A
<b>Residential (Post-restoration)</b>	Moderate-slight to slight neutral	Negligible neutral effect	N/A	N/A	N/A	N/A
<b>Land + Soils (Operational Phase)</b>	N/A	Negligible neutral effect	N/A	N/A	N/A	Moderate neutral effect
<b>Land + Soils (Post-restoration)</b>	N/A	Negligible neutral effect	N/A	N/A	N/A	Negligible to minor beneficial

17.3.2 Inspection of the screening matrix table above indicates that, due to the negligible/neutral impact effects that have been assessed for flood risk in both the operational and post-restoration phases of the development, only the nearby residential receptors (and only during the operational phase of the development) have the potential to be affected by in-combination effects, where visual, noise, dust and traffic impacts could potentially act in-combination. All the other potential receptors for in-combination effects have been assessed to only be affected by one impact type other than flood



risk and hence the conclusion of negligible/neutral flood risk effects eliminates the potential for in-combination effects on these receptors.

17.3.3 The residential receptors closest to the site are located immediately adjacent to Bourbles Lane or just to the west of the proposed plant area, off Gaulters Lane. In addition there are residential properties located between the site access on Lancaster Road (B5270) and junction with the A588.

17.3.4 The impact factors that have potential to act in combination on these receptors during the operational phase are visual and noise, with potential traffic and dust/air quality effects being eliminated due to an assessment of negligible/neutral impact effects during the operational phase. In the case of the properties immediately adjacent to the site, the visual impact has been assessed as temporary moderate adverse (although this will reduce to temporary slight adverse as the mineral extraction moves from one phase to the next). The noise impact has been assessed as minor adverse for operational site noise.

17.3.5 In view of the minor classification of the noise impact magnitudes during the operational period, in-combination effects at the nearby residential receptors are only considered to be of potential concern during the short-term operations within a specific phase. The sequencing of the extraction works will be over a period of only 4-6 weeks when mineral extraction is taking place at its closest to these properties.

17.3.6 During this limited operational period the visual impact on these receptors is assessed to be moderate adverse and the short-term noise as minor adverse (but remaining within the limits set out within the PPG) the potential in-combination impact effects of visual and noise impacts on the properties are considered to be temporary moderate adverse of short duration and therefore not considered significant. It is considered that the short-term nature of the campaign extraction work can be considered like roadworks or utility works on the public highway.

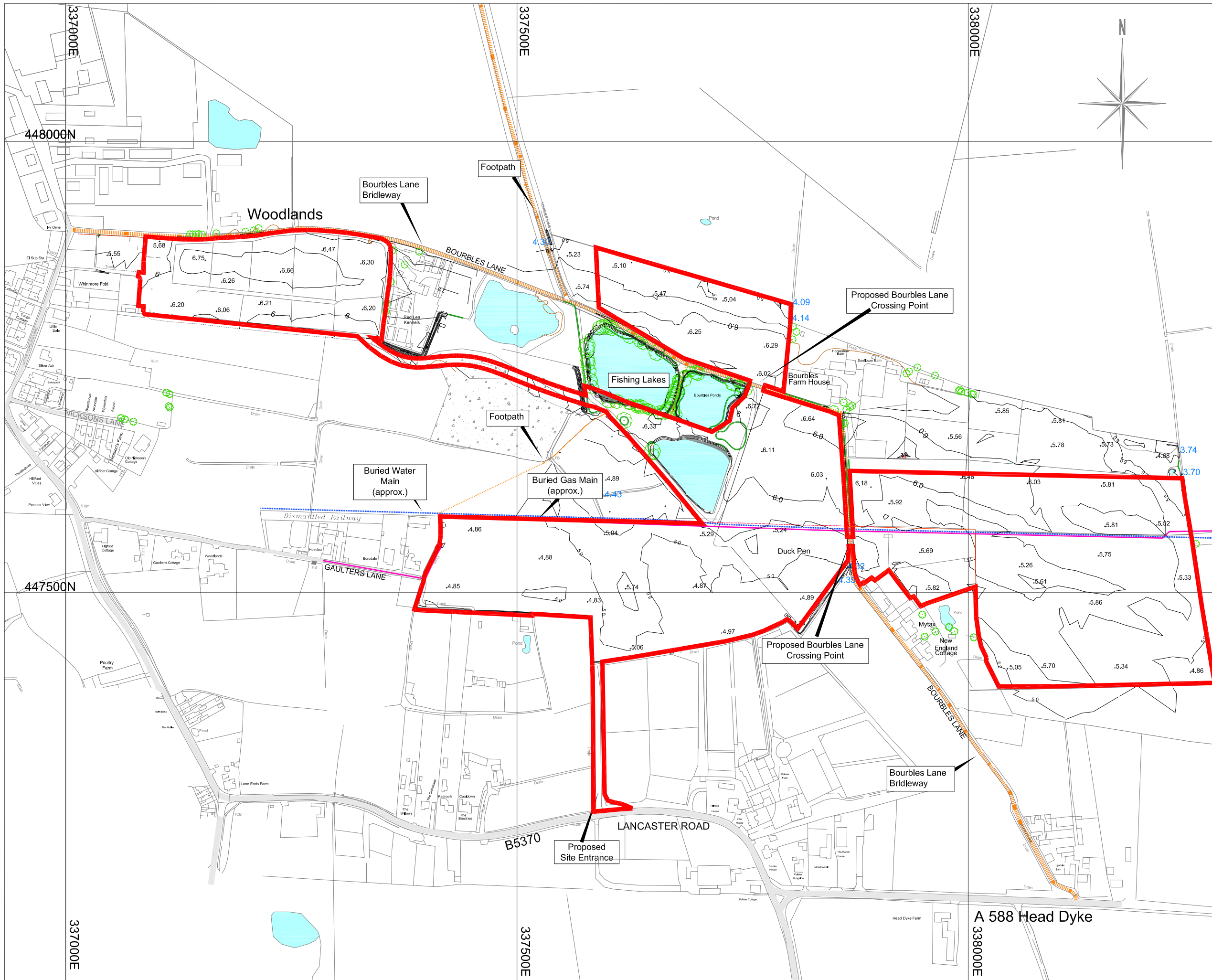
#### 17.4 **Conclusions and recommendations**

17.4.1 The cumulative and in-combination impact effects of the proposed development have been assessed as negligible to minor adverse generally, with the potential for moderate adverse in-combination effects for a short-term (4-6 week extraction campaign period). The cumulative and in-combination impact effects are assessed as acceptable and are therefore not considered significant.

## 18. SUMMARY AND CONCLUSIONS

- 18.1 This planning application is being submitted for the of a short-term minerals' development on land off Bourbles Lane, near Preesall (termed Bourbles Quarry), with sand and gravel extraction and processing, the construction of a new site access road, landscaping proposals, and the importation of inert backfill materials to enable restoration back to original site levels.
- 18.2 The scope of the Environmental Impact Assessment was set out by Lancashire County Council through the submission of a formal request for a scoping opinion, together with detailed pre-application responses from the Mineral Planning Authority.
- 18.3 An assessment of the potential alternatives has been made and the results confirm that the minerals development on the proposed Bourbles Quarry is the most sustainable option for the site, other than a "do nothing scenario". The need for the minerals is considered a high priority for the County as clearly identified in local minerals policy.
- 18.4 An examination of each area of potential impact has been undertaken in a thorough and systematic manner and are presented as the technical appendices of the EIA. The design of the proposals has evolved and changed to ensure that there will be no significant adverse effects on designated landscapes, designated areas of ecological or archaeological interest or other aspects of the local environment.
- 18.5 A series of environmental protection measures have been proposed and incorporated into the scheme to remove or minimise any intrusion and or disturbance on the local residential properties and the local environment during the quarry operations and long-term restoration. The implementation of the environmental protection measures proposed are described within the EIA technical appendices.
- 18.6 It is considered that the proposed mineral development will provide benefits to the wider business and construction sectors by supplying high quality mineral resources into the local construction markets and housing industry. In addition, the proposed restoration scheme will provide biodiversity enhancements to the local area and will provide wider tourism benefits and opportunities (the leisure lodge proposals) that will replace the large-scale duck breeding activities that have been carried out on the site for many years.

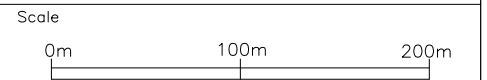
## PLANS



**Key**

- Application Area
- Footpaths & Bridleway

**Surveyed Site Levels (mAOD)**  
 Contours (0.5m intervals)

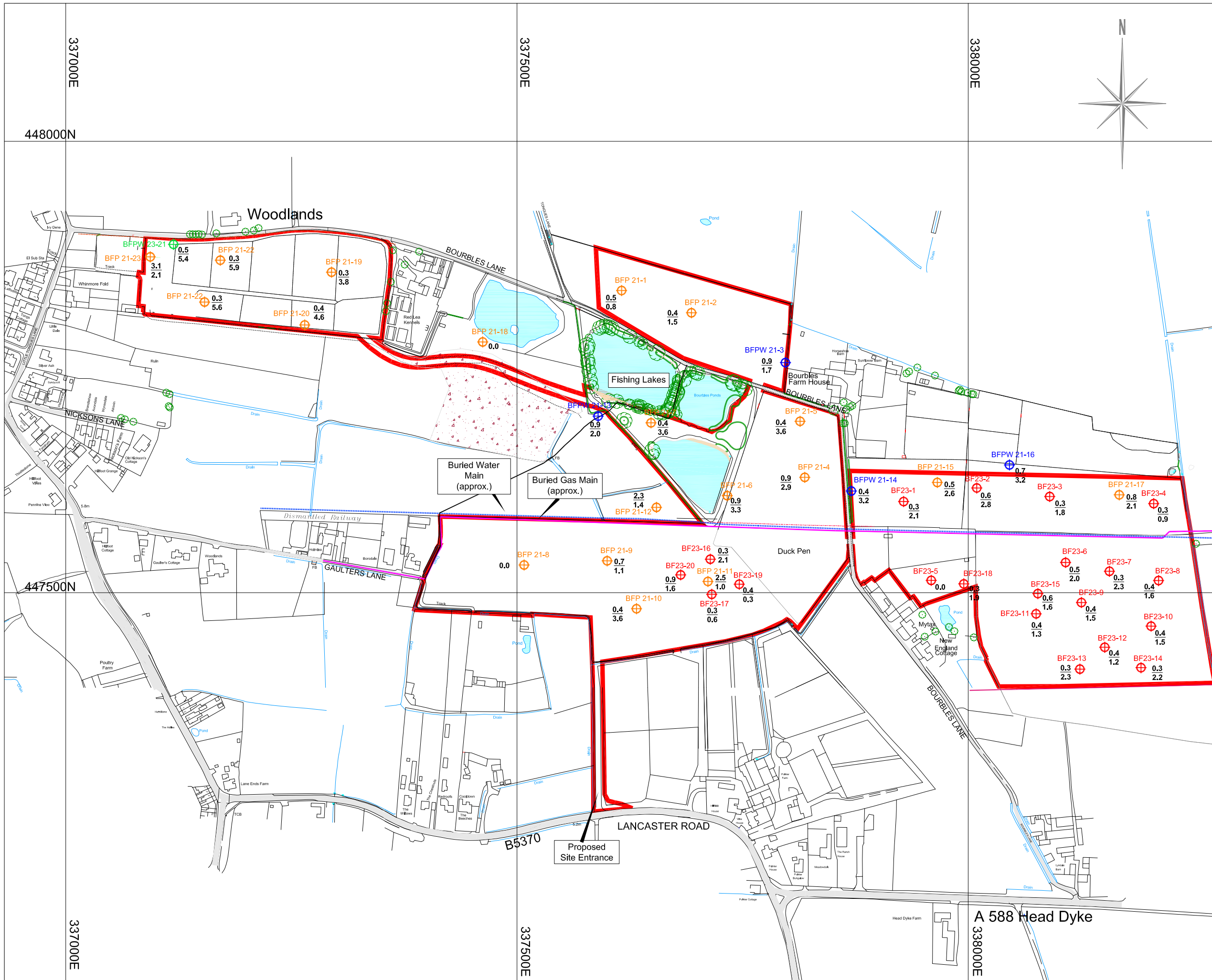


Site surveyed by Greenfield Associates March 2021 & May 2022.  
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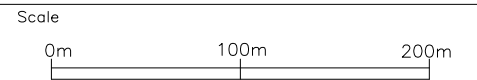
**Site** Proposed Bourbles Quarry  
**Project** Environmental Statement  
**Plan** Plan ES23-1 Site Plan & Application Area

**Scale:** 1:4000@A3  
**Date:** 30/06/2023  
**File:** PlanES23-1 SitePlan  
**Drawn by:** SJR





- Key**
- Application Area
  - ⊕ 2021 Exploration Borehole
  - ⊕ 2021 Water Monitoring Borehole
  - ⊕ 2023 Exploration Borehole
  - ⊕ 2023 Water Monitoring Borehole
  - $\frac{0.5}{1.7}$  Overburden Thickness (m)  
Mineral Thickness (m)



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Site **Proposed Bourbles Quarry**

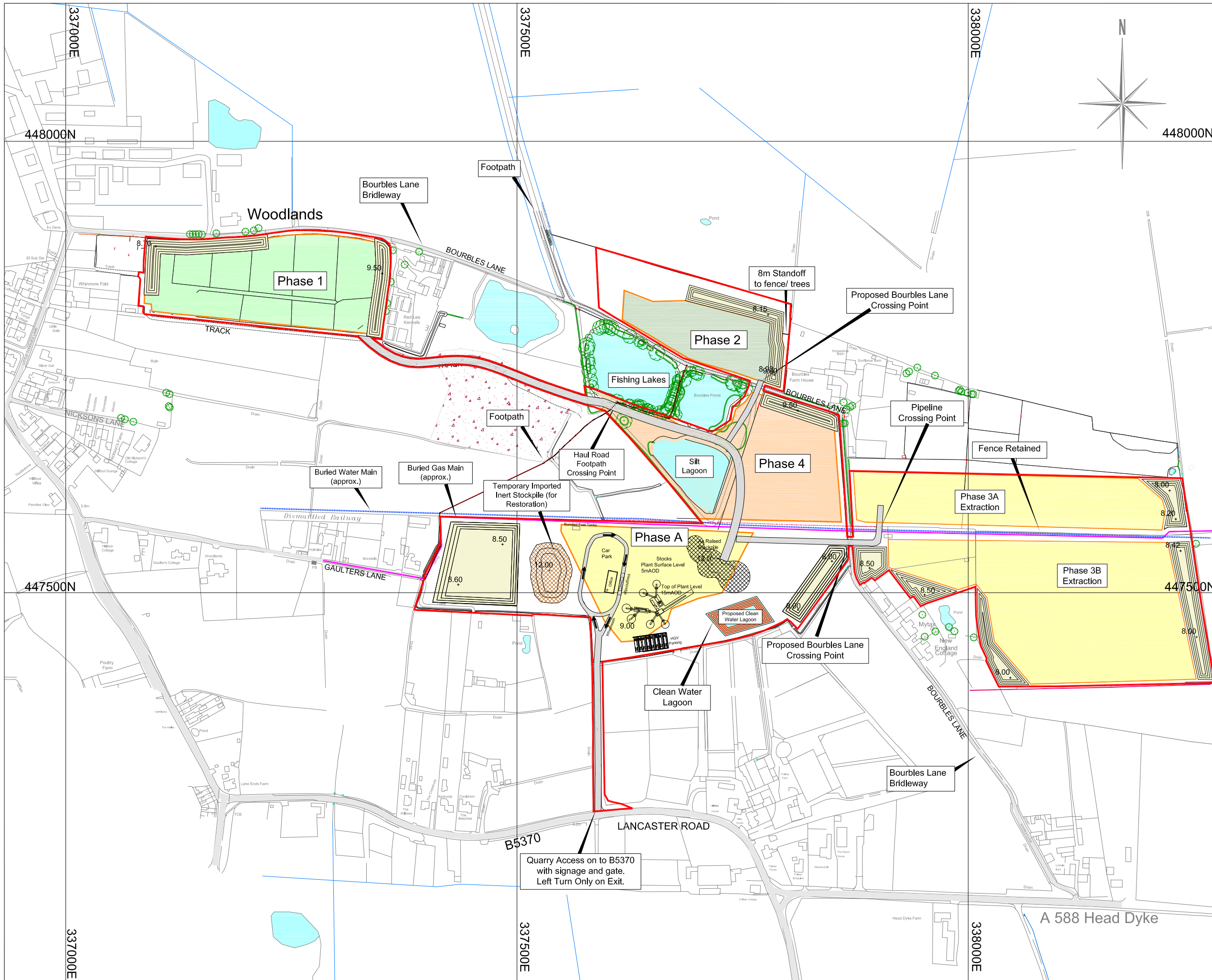
Project **Environmental Statement**

Plan **Plan ES23-2 Borehole Locations & Site Geology**

Scale: 1:4000@A3  
 Date: 30/06/2023  
 File: PlanES23-2 BHLocs  
 Drawn by: SJR

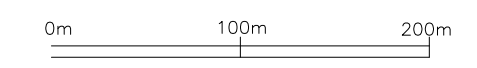






**Key**

- Application Area
- Footpaths & Bridleway
- Indicative Levels (mAOD)
- Proposed Soil Storage & Screening Bunds

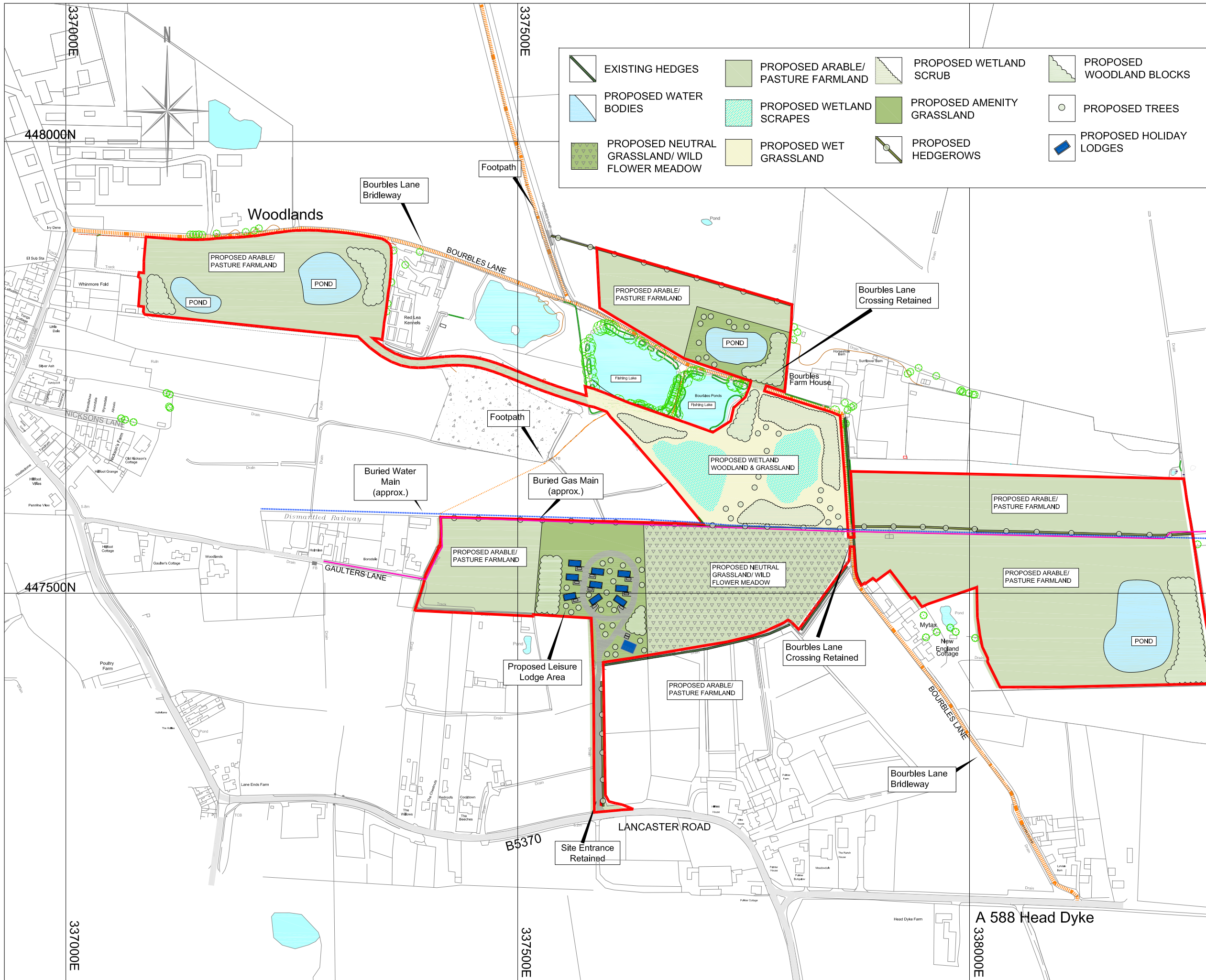


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**Site** Proposed Bourbles Quarry  
**Project** Environmental Statement  
**Plan** Plan ES23-3 Proposed Site Layout & Phasing

**Scale:** 1:4000@A3  
**Date:** 30/06/2023  
**File:** PlanES23-3 Phasing  
**Drawn by:** SJR



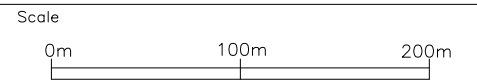


	EXISTING HEDGES		PROPOSED ARABLE/PASTURE FARMLAND		PROPOSED WETLAND SCRUB		PROPOSED WOODLAND BLOCKS
	PROPOSED WATER BODIES		PROPOSED WETLAND SCRAPES		PROPOSED AMENITY GRASSLAND		PROPOSED TREES
	PROPOSED NEUTRAL GRASSLAND/WILD FLOWER MEADOW		PROPOSED WET GRASSLAND		PROPOSED HEDGEROWS		PROPOSED HOLIDAY LODGES

**Key**

- Application Area
- Footpaths & Bridleway

Restoration Concept Based on Design by ReLandscape Ltd



Site surveyed by Greenfield Associates March 2021 & May 2022.  
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Site **Proposed Bourbles Quarry**

Project **Environmental Statement**

Plan **Plan ES23-4 Conceptual Restoration**

Scale: 1:4000@A3  
 Date: 17/07/2023  
 File: PlanES23-4 Restn  
 Drawn by: SJR



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 Tel: 0115 937 2002

APPENDIX 1  
Lancashire County Council  
Scoping Opinion



## APPENDIX 2

### Transport Statement Report

**APPENDIX 3**  
**Landscape and Visual Impact**  
**Assessment Report**

# APPENDIX 4a

## Ecological Appraisal Report

# APPENDIX 4b

## Ecological Impact Assessment Report

## APPENDIX 4c

### Biodiversity Net Gain Report

APPENDIX 5  
Arboricultural Constraints  
Appraisal Report

APPENDIX 6  
Soil Resources and Agricultural  
Land Quality Report

APPENDIX 7  
Hydrogeological Impact  
Assessment Report



## APPENDIX 8

### Flood Risk Assessment

# APPENDIX 9

## Noise Assessment Report

# APPENDIX 10

## Air Quality Assessment Report

APPENDIX 11  
Historic Environment Desk-  
Based Assessment Report

APPENDIX 12  
Groundsure Enviro &  
Geo Insight report

APPENDIX 13  
Historical Ordnance  
Survey maps