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# DEVELOPMENT OF UP TO 1,760 DWELLINGS AND UP TO 43 HECTARES OF EMPLOYMENT LAND - "BARNSLEY WEST" -

# ENVIRONMENTAL IMPACT ASSESSMENT: SCOPING REPORT

## LAND SOUTH OF BARUGH GREEN ROAD, BARNSLEY (LOCAL PLAN SITE ALLOCATION 'MU1')

### ON BEHALF OF: STRATA STERLING BARNSLEY WEST LTD

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PLANNING | DESIGN | ENVIRONMENT | ECONOMICS

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# PART ONE – INTRODUCTION

## 1. INTRODUCTION

Overview

1.1 This Scoping Report has been prepared to accompany a formal Environmental Impact Assessment (EIA) Scoping Request to Barnsley Metropolitan Borough Council (BMBC) in relation to the proposed development of up to 1,760 residential dwellings and up to 43 hectares of Employment Land, as part of the "Barnsley West" development on land south of Barugh Green Road, Barnsley (Local Plan Site Allocation 'MU1').

1.2 The Scoping Request is made under Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. The purpose of the Scoping Request is to seek a formal Scoping Opinion from Barnsley Metropolitan Borough Council on the information to be contained within an Environmental Statement (ES) to be prepared to form part of the forthcoming planning application for the proposed development.

1.3 The Scoping Report invites Barnsley Metropolitan Borough Council, statutory consultees, non-statutory consultees and other stakeholders and interested parties to provide input into the EIA process and comment upon the proposed content of the ES.

1.4 The proposed development site is located in an area of agricultural fields to the west of Barnsley. A plan showing the location of the site is illustrated in **Appendix 1**. The centre of the site has an approximate grid reference of 431700,407250. On the basis that part of the site will be subject to an outline application, it has been deemed appropriate to prepare a Parameters Plan for the purposes of undertaking the assessment of the proposals. This will then allow for further iteration to take place to the scheme, within the remit of the assessed parameters, without the ES becoming out of date, if the outline masterplan were to evolve at the Reserved Matters application stage. This EIA Parameters Plan is provided at **Appendix 2**.

The Applicant - Strata Sterling Barnsley West Ltd

1.5 Strata Sterling Barnsley West Ltd are a joint venture between developer Strata Homes and Sterling Capitol PLC.

1.6 Strata Homes are an established home builder with 18 current developments across Yorkshire and the Midlands and head offices in Doncaster. Their Chief Executive, Andrew Weaver, is the fourth generation of the family to run the business. A love of design is echoed throughout every house type, street scene and show home created by Strata. They have an unrivalled attention to detail and care for product quality and specification. They are continually looking forward and progressing to be the best in the market.

1.7 Sterling Capitol develops high quality industrial, office, leisure and retail properties within its Capitol Park branded business parks located along prime motorway junctions across northern England. From acquisition and joint ventures, to construction and ongoing property management, Sterling Capitol realises long-term value for its customers and partners with a focus on sustainability. As part of this, Sterling have delivered over 8,000 jobs in the Yorkshire area.

Consultant Team

1.8 Strata Sterling Barnsley West Ltd have appointed a team of specialist consultants to consider planning and environmental matters in relation to the proposed development and to provide input into the production of this Scoping Report.

| **Topic** | **Consultant** |
|---|---|
| Planning and EIA | Pegasus Group |
| Landscape and Visual Effects | Gillespies |
| Ecology | Tetra Tech |
| Transport | Fore Consulting |
| Archaeology and Cultural Heritage | Prospect Archaeology |
| Ground Conditions, Flood Risk and Drainage | JPG |
| Air Quality | Wardell Armstrong |
| Noise | Environmental Noise Solutions |

1.9 The Scoping Report has been produced by Pegasus Group. Pegasus are registered to the EIA Quality Mark, a scheme operated by the Institute of Environmental Management and Assessment (IEMA) which allows consultancies that lead the co-ordination of statutory EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

Structure of the Scoping Report

1.10 The remainder of this EIA Scoping Report is divided into a number of sections. These are as follows:

**Section 2:** **The Environmental Impact Assessment (EIA) Process**
A summary of the EIA process which will be undertaken

**Section 3:** **Site and Project Overview**
An overview of the site and the development proposals

**Section 4:** **Planning Policy Context**
A summary of the relevant planning policy relevant to the proposals

***PART 2*** ***PROPOSED CONTENT OF ENVIRONMENTAL STATEMENT***

**Section 5:** **Proposed Content of the Environmental Statement (ES)**
An overview of the proposed structure and format of the ES documents

**Section 6:** **Introductory ES Chapters**
Summary of the proposed approach to the Introductory Chapters of the ES

**Sections 7-14:** **Environmental Topic Chapters**
Summary of the assessment approach proposed for each of the environmental topics proposed to be included in the ES

***PART 3*** ***'TOPICS TO BE SCOPED OUT'***

**Section 15:** **Topics to be 'Scoped-out' and not included in the Environmental Statement (ES)** Each environmental topic not to be considered in the ES is discussed in turn

## 2. THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCESS

Overarching Legislation

2.1 The EIA process will be undertaken in accordance with the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, which are referred to in this document as the 'EIA Regulations'.

EIA Process Overview

2.2 The EIA process for the proposed development can be considered as having the following stages, each of which is discussed further in this section:

- Screening;
- Scoping (as initiated by this document);
- Baseline Studies;
- Assessment of environmental effects and evaluation of significance; and
- Production of the Environmental Statement.

*Screening*

2.3 The proposed development lies within Part 10(b) of Schedule 2 of the EIA Regulations, *'Urban development projects'*. A formal EIA Screening Opinion was not sought from Barnsley Metropolitan Borough Council, as a review of the indicative thresholds and criteria for such developments identified that the proposals would comprise EIA development and an ES would be required to be submitted as part of the planning application.

*Scoping*

2.4 There is no formal requirement to undertake consultation on information to be contained within the ES, however, the EIA Regulations provide for obtaining a Scoping Opinion from the Local Planning Authority regarding the potential environmental impacts that should be considered in the EIA (Regulation 15). The purpose of this Scoping Report is to accompany the request for such a Scoping Opinion.

2.5 Regulation 15 requires that a Request for a Scoping Opinion shall include the following:

- a plan sufficient to identify the land;
- a brief description of the nature and purpose of the development, including its location and technical capacity;

- an explanation of the likely significant effects of the development on the environment; and
- such other information or representations as the person making the request may wish to provide or make;

2.6 This Scoping Report includes a plan identifying the location of the site in the sub regional context (**Appendix 1**). It also includes a brief description of the site, the proposal and of its possible effects on the environment, as required under this Regulation.

*Baseline Studies*

2.7 In the case of many of the environmental topics which will be covered in the ES, or which it is proposed to scope-out of the ES, baseline studies have already been undertaken, and details of this work can be found in the discussion of each environmental topic presented subsequently in this Report. Baseline conditions are established within each of the individual environmental assessments through the use of a number of sources including:

- desk top review of existing available data;
- site specific survey work; and
- consultation.

*Assessment of Environmental Effects and Evaluation of Significance*

2.8 The EIA Regulations require that the ES identifies 'likely significant effects of the life extension proposal on the environment'. It is recognised in the EIA Regulations however that not all environmental effects are significant.

2.9 The evaluation and determination of significant effects will be carried out using specific criteria defined within each of the technical chapters of the ES. Where available, published standards and guidelines will be used as the basis for the significance criteria.

2.10 The proposed methodologies for individual environmental topics are discussed in the subsequent section. However, the basic approach is the same for all environmental topics and is set out below:

- The sensitivity of the receiving environmental receptor is evaluated using defined criteria.

- The nature of the impact is established in terms of its duration, extent, frequency, likelihood of occurrence, reversibility, and compliance with recognised standards;
- The magnitude of the impact is determined. The magnitude of change is a consideration of how much the impact alters the baseline condition.
- The significance of the effect is determined by cross referencing the sensitivity of the receptor with the magnitude of change on the receptor.

*Nature and Type of Effects*

2.11 It should be noted that environmental effects may be positive or negative and this will be noted in the ES. Effects will be considered both during the construction phase, when the development is being built (temporary effects) and following completion of the development (permanent effects).

*Cumulative Effects*

2.12 Where applicable, the ES will have due regard for potential cumulative effects in line with the 'Information for inclusion in environmental statements' set out in Schedule 4 of the EIA Regulations. In particular, it is noted that in the vicinity of the site, there is an application for 140 dwellings (*App 2020/0977*), on a parcel of land which lies adjacent to the Site and which also forms part of the wider site allocation.

2.13 There are also two applications (*App 2020/0027 and 2020/0028*) which have already been submitted and consented for works within the Site associated with the delivery of the new Link Road between M1, Junction 37 and the A635, Barugh Green Road. Given how the works included with these applications are integral to the overall proposals at the Site it is understood that they should be considered within the main assessment as part of the overall proposals, rather than within the separate cumulative effects section.

2.14 The wider applications for further upgrades to the highways network may also be relevant for consideration in the cumulative effects section of some chapters of the ES, as may other proposed developments in the wider area. This includes the application for 'Highways works comprising the linking of Capitol Close and Higham Lane via a new roundabout, road realignment and widening works throughout, enlargement of existing roundabout located at Capitol Close and Whinby Road and provision of associated footpaths, combined cycle/footpath and

verges' (*App 2020/0040*). Also of relevance may be the application at Penny Pie Park, Dodworth Road/Pogmoor Road, Barnsley for 'Signalised gyratory roundabout with improvements to the existing Dodworth Road / Broadway / Pogmoor Road junction and re-configuration of park' (*App 2018/0965*).

## 3. SITE AND PROJECT OVERVIEW

*Site Location*

3.1 The site is located 2km west of Barnsley town centre, on land between the communities of Gawber, Higham, Pogmoor, Redbrook and Barugh Green and immediately north-east of Junction 37 of the M1 motorway. The site comprises of approximately 116 hectares of open fields, which were previously an open-cast mine and later refilled. A plan showing the location of the site is illustrated in **Appendix 1.** The centre of the site has an approximate grid reference of 431700,407250.

3.2 The site comprises a significant proportion of the wider 'Barnsley West Masterplan Framework' area which is allocated for development within the Barnsley Local Plan, adopted in January 2019, under Local Plan reference MU1. The remainder of the Masterplan Framework area is within private ownership and does not form part of the site area which is subject to this Scoping Report.

3.3 Considerable areas of the site have been subject to opencast mining in the middle years of the 20th century. The ground conditions of the site were affected by the previous open cast mining and infill, meaning that there are clear areas where development is restricted (highwalls). The topography of the site is also currently steeply sloping. The initial site works would therefore require groundworks to reduce some of these slopes and create suitable levels and platforms for development to take place.

3.4 Above ground utilities also run throughout two areas of the site to the north and south, in the form of overhead electrical wires.

3.5 The site has a strong existing network of rights of way and footpaths. Public Footpath 11 runs across the northern section of the site on an east-west axis between Higham Common Road and Church Street. At the east end, the footpath joins with Public Footpath 12 adjacent to Redbrook Farm, which provides a route to Redbrook Road. Public Footpath 248 runs along the southeast boundary of the site and continues north, to provide a connection between Pogmoor and Church Street, via Gawber Primary School. Public Footpath 249 runs northwest from the end of Farm House Lane and joins Public Footpath 13 which continues west across the site, joining Hermit Lane. Public Footpaths 250 and 252 also provide short links between Public Footpaths 248 and 249. A short distance to the east,

Public Footpath 40 heads north from Hermit Lane, joining with Public Footpath 11.

3.6 The site may contain early medieval boundaries and possible later medieval farm buildings and agricultural activity. Post-medieval assets relate mainly to industrial activity. There were mine access shafts at various locations on the site and a stone-kerbed track follows the Dodworth/Barnsley township boundary through the site. A milepost also sits on the northern boundary which is Grade II listed. It has already been agreed to move this milepost to a new location as part of the related application for works within the Site associated with the delivery of the new Link Road between M1, Junction 37 and the A635, Barugh Green Road. Listed Building Consent was granted for the relocation of the milepost on 27/11/2020 (*app 2019/1567*).

*Project Overview*

3.7 The proposed development comprises a mixed-use development to provide up to 1,760 new homes and up to 43 hectares of employment land, part of which would be for Use Class E/B2/B8 and part of which would be for Use Class B2/B8 (currently understood to equate to 120,509.3 sqm of employment floorspace, of which 114,131.5 sqm would be for Use Class B2/B8 and 6,377.8 sqm would be for Use Class E/B2/B8). In addition, the proposals will provide:

- *Part of the Link Road between M1, Junction 37 and the A635, Barugh Green Road (The section from Higham Lane to Barugh Green Road)*
- *A new primary school*
- *Small local shops and community facilities*
- *Strategic areas of greenspace and wildlife corridors*

3.8 The vision for the Barnsley West is to provide a new sustainable community, combining high quality new homes with new jobs, facilities and plentiful open space, available to new and existing residents – A special place of well-being, to enjoy for living, working and learning.

3.9 Barnsley has a significantly increasing need for housing and employment space. Barnsley West will play an essential role in realising that requirement over the next 15-20 years.

3.10 The site is strategically located for a high-quality, sustainable, mixed-use community. Acting as an urban extension of Barnsley, health and wellbeing is at the heart of the proposals which have been a landscape-led development.

Barnsley West will create a more productive landscape for walking, cycling, growing food and biodiversity.

3.11 A new link road will connect both ends of the site, from Higham Lane to Barugh Green Road, part of the wider route between M1, Junction 37 and the A635, Barugh Green Road, and will provide a much-needed thoroughfare.

3.12 The highwalls associated with the former coal mining activity at the site are undevelopable land, and as such become an opportunity to become quality landscape and recreation areas. These would then link up with existing rights of way to promote permeability through the site and preserve other features such as the woodland and Hermit Lane.

3.13 The employment component of the development needs links to the M1 to minimise the impact of lorries driving along the remainder of the link road. The logical location for the employment zone is therefore on the southern part of the site. Additionally, the southern area of the site has frontage to the M1 and will therefore be closest to the existing noise source from the motorway.

3.14 The site has a strong existing network of rights of way and footpaths and these will be retained to create accessible pedestrian and cycle routes into and throughout the development. The strategic location of the site ensures the site is well connected to local amenities, schools and roads.

3.15 As a consequence of modifying the levels of the site for construction, it will not be possible to retain the existing hedgerows and some sections of woodland. As such new ecology features will be introduced elsewhere to create a high-quality, green environment for the development. The sustainable drainage strategy to be included within the proposals will provide water features to complement this.

*Development Phasing*

3.16 Remodelling of the site would last for up to eight years, to allow for the necessary bulk earthworks and land surcharging [time for the ground to settle and strengthen] in order to create appropriate platforms for the development, along with associated drainage infrastructure. The built development itself would take place in three main phases during this period, as follows:

- *Phase 1a* - Phase 1 of the residential development (up to 275 dwellings) including the primary school and the first part of the Link road running from Barugh Green Road to the northernmost internal roundabout.
- *Phase 1b* – the Employment development.
- *Phase 2* – the remainder of the Link road from Higham Lane to the northernmost internal roundabout
- *Phase 3* - the remainder of the residential development over a series of further phases

*Site Levels*

3.17 Following the site remodelling and creation of the development platforms there would be some change to the existing contours at the site. The new site levels would however be graded back into the existing contours surrounding the site in a sensitive manner. A plan illustrating the existing and current draft emerging proposed site levels is provided at **Appendix 3**.

*EIA Assessment Parameters*

3.18 On the basis that part of the site will be subject to an outline application, it has been deemed appropriate to prepare a Parameters Plan for the purposes of undertaking the assessment of the proposals. This will then allow for further iteration to take place to the scheme, within the remit of the assessed parameters, without the ES becoming out of date, if the outline masterplan were to evolve at the Reserved Matters application stage. This EIA Parameters Plan is provided at **Appendix 2**.

## 4. PLANNING POLICY CONTEXT

Introduction

4.1 The relevant development plan policy framework comprises of the recently adopted Barnsley Local Plan (2019).

4.2 The site is allocated for 'Mixed Use' as part of the wider allocation *'Site MU1 Land south of Barugh Green Road'*. This policy is reproduced in full below.

**Site MU1 Land south of Barugh Green Road**

***The site is proposed for mixed use predominantly for housing and employment. The indicative number of dwellings proposed on this site is 1700. These are included in the housing numbers for Urban Barnsley in the housing chapter.***

***43 ha of employment land is proposed on the site and is included in the employment land figures in the Urban Barnsley section of the Economy chapter.***

***The development will be subject to the production and approval of a Masterplan Framework covering the entire site which seeks to ensure that the employment land is developed within the plan period, that community facilities come forward before completion of the housing and that development is brought forward in a comprehensive manner.***

***The development will be expected to:***

- ***Provide a primary school on the site;***
- ***Ensure that ground stability and contamination investigations are undertaken prior to development commencing and necessary remedial works completed in accordance with the phasing plan;***
- ***Provide on and off site highway infrastructure works, including a link road (Claycliffe Link) and improvements at Junction 37 as necessary;***
- ***Provide small scale convenience retail and community facilities in compliance with Local Plan policy TC5 Small Local Shops;***
- ***Retain, buffer and manage the watercourse, grassland and woodland north-east of Hermit Lane; Retain, buffer and manage the species-rich hedgerows and boundary features. Where this is not possible transplant hedgerows including root balls and associated soils. A method statement for this should be provided and agreed prior to works commencing;***
- ***Create/retain wildlife corridors through/across the site;***
- ***Provide accessible public open space;***
- ***Ensure that any sustainable drainage system incorporating above-ground habitats is designed from the outset to serve the whole site;***
- ***Give consideration to the drain/culvert that runs through the site; and***
- ***Include measures for the protection and retention of the listed milepost on Barugh Green Road 500m west of the junction with Claycliffe Road and its immediate setting; and Protect the routes of the Public Rights of Way that cross the site, and make provision for these as part of any proposal.***

***Archaeological remains may be present on this site therefore proposals must be accompanied by an appropriate archaeological assessment (including a field evaluation if necessary) that must include the following:***

- ***Information identifying the likely location and extent of the remains, and the nature of the remains;***
- ***An assessment of the significance of the remains; and***
- ***Consideration of how the remains would be affected by the proposed development.***

4.3 Table 4.1 below lists other policies contained within the Barnsley Local Plan of relevance to the proposed development:

**Table 4.1: Policies contained within the Barnsley Local Plan of relevance to the proposed development**

| Policy Reference |
|---|
| Policy GS2 - Green Ways and Public Rights of Way |
| SD1 - Presumption in favour of Sustainable Development |
| GD1 - General Development |
| LC1 - Landscape Character |
| HE1 - The Historic Environment |
| HE6 - Archaeology |
| GI1 - Green Infrastructure |
| BIO1 - Biodiversity and Geodiversity |
| CC1 - Climate Change |
| CC3 - Flood Risk |
| CC4 - Sustainable Drainage Systems (SuDS) |
| MIN3 – Non-Mineral Development and Safeguarding Minerals |
| UT 2 - Utilities Safeguarding |
| I2 - Educational and Community Facilities |

# PART TWO - PROPOSED CONTENT OF ENVIRONMENTAL STATEMENT

## 5. INTRODUCTION

5.1 This section of the Scoping Report sets out the proposed content of the Environmental Statement (ES). It includes details of each of the individual Chapters which are to be included in the ES, and confirms the legislative requirements which the ES is required to fulfil.

Legislative Requirements

5.2 Schedule 4 of The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 *'Information for inclusion in environmental statements'* requires that an Environmental Statement should include at least the following information:

*Part 1:*

- ***'A description of the development'*** *- including information on the location of the development site, the physical characteristics of the development,*

*Part 2:*

- ***'A description of the reasonable alternatives studied by the developer'*** *– for example with regard to development design, technology, location, size and scale*

*Part 3:*

- ***'A description of the relevant aspects of the current state of the environment (baseline scenario)'*** *- including how the baseline might evolve if there development were not to proceed*

*Part 4:*

- ***'A description of the factors specified in regulation 4(2) likely to be significantly affected by the development'*** *– including with regard to population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape*

*Part 5:*

- ***'A description of the likely significant effects of the development on the environment'*** *- including with regard to: construction and/or demolition works, the use of natural resources, emission of pollutants and the disposal of waste, the potential for accidents, cumulative effects with other developments, vulnerability with respect to climate change and the technologies and materials to be used.*

- *The description of the likely significant effects should cover* ***'direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development'***

*Part 6:*

- ***'A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment'*** *- including with regard to: technical deficiencies or lack of knowledge encountered compiling the required information and the main uncertainties involved.*

*Part 7:*

- ***'A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment'*** *- including where appropriate with regard to: any proposed monitoring arrangements (for example the preparation of a post-project analysis).*
- *The description should explain the* ***'extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset'****, and should cover both the construction and operational phases.*

*Part 8:*

- ***'A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned'****. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.*

*Part 9:*

- ***'A non-technical summary of the information provided under paragraphs 1 to 8'.***

*Part 10:*

- ***'A reference list detailing the sources used for the descriptions and assessments included in the environmental statement'.***

Proposed Structure of the Environmental Statement

5.3 The Environmental Statement (ES) will report the findings of the EIA. The ES will include a separate Non-Technical Summary (NTS) document which will provide a simple summary of the key information presented in the Environmental Statement in a non-technical manner.

5.4 It is proposed that the ES will be structured to include a number of introductory chapters followed by a series of technical assessment chapters with regard to the following topics, as follows in Table 5.1:

**Table 5.1: Proposed ES Chapters**

| ES Chapter | Title |
|---|---|
| 1 | Introduction |
| 2 | Environmental Impact Assessment Process |
| 3 | Site and Project Description |
| 4 | Consideration of Alternatives |
| 5 | Planning Policy Context |
| 6 | Landscape and Visual Effects |
| 7 | Ecology (Biodiversity) |
| 8 | Transport |
| 9 | Archaeology and Cultural Heritage |
| 10 | Ground Conditions |
| 11 | Flood Risk and Drainage |
| 12 | Air Quality |
| 13 | Noise |

5.5 Each of these proposed chapters is discussed in more detail in turn in subsequent sections of the Scoping Report.

## 6. INTRODUCTORY ES CHAPTERS

Introduction Chapter

6.1 This Chapter will provide an introduction to the Environmental Statement. It will set out a brief overview of the site, the proposed development and the environmental topics which have been considered as part of the EIA and which are reported in the ES. It will summarise the consultant team responsible for its production and explain how consultees and members of the public can comment on the document or obtain additional copies of the ES.

Environmental Impact Assessment Process Chapter

6.2 This Chapter will provide an overview of the legalisation and regulations which cover EIA in England and describe the stages in the EIA process which have resulted in the production of the final ES. This chapter will include a description of the Screening and Scoping exercise and a summary of the consultation which has taken place during the EIA.

6.3 The chapter will explain how significant effects are defined and provide a framework within which significant effects have been determined for individual environmental topics. It will provide definitions for the key terminology used throughout the ES.

6.4 The chapter will explain how environmental effects may be adverse or beneficial, temporary or permanent. It will also explain how potential cumulative effects have been handled in the ES.

Site and Project Description Chapter

6.5 A full description of the site and proposed development shall be set out.

Consideration of Alternatives Chapter

6.6 It is a requirement of the Town and Country Planning EIA Regulations that an ES must include ***'A description of the reasonable alternatives studied by the developer'*** for example with regard to development design, technology, location, size and scale. This chapter will describe the decision-making process which has resulted in the proposed development.

Planning Policy Context Chapter

6.7 This chapter shall identify all the relevant planning policy against which the various environmental topics addressed in the ES will be considered. Policy will be identified at the national, regional and local level as appropriate.

# 7. LANDSCAPE AND VISUAL EFFECTS CHAPTER

## Introduction

7.1 Gillespies LLP ('Gillespies'), has been commissioned, on behalf of Strata Sterling Barnsley West Ltd ('the Applicant'), to undertake a Landscape and Visual Impact Assessment (LVIA) as part of an Environmental Impact Assessment (EIA) for the proposed residential and employment scheme at Land south of Barugh Green Road, known as 'Barnsley West' (the 'Proposed Development'). The purpose of this assessment will be to identify any potentially significant landscape and visual effects that are predicted to arise from the construction and operational stages of the proposed mixed use development of the 116ha Barnsley West site (the 'Site'), which is located between the settlements of Higham and Gawber, west of Barnsley.

7.2 Kara Heald will be the lead author for this LVIA. She is a Chartered Landscape Architect, with over 12 years' experience of working on LVIAs and landscape appraisals for a variety of developments, including wind farms and residential schemes.

## Description of Potential Effects

7.3 The principal aspects considered within this assessment are landscape effects and visual effects, which are related but different concepts:

- Landscape effects are the effects on the landscape as a resource, including the constituent physical elements of the landscape as well as its specific aesthetic or perceptual qualities, the character of the landscape in different areas and any special interests such as designations or special qualities; and
- Visual effects are the effects on specific views and on the general visual amenity[1] experienced by people at different places.

7.4 The Proposed Development may give rise to direct and indirect effects on landscape and visual receptors. To ensure that such effects are avoided or minimised, the assessment will be undertaken as part of the iterative design process, with modifications being made to the design in response to identified effects.

[1] Visual amenity is the overall pleasantness of the views people enjoy of their surroundings.

7.5 Where significant effects cannot be avoided, consideration will be given to any opportunities to offset, remedy or compensate for such unavoidable adverse effects. However, it is considered that the iterative design process and any embedded[2] mitigation should minimise any significant adverse effects and ideally result in some beneficial long-term effects.

7.6 The assessment will consider the effects of the Proposed Project at the following points in time:

- Construction – the point at which the construction works would be visible;
- Operation – the point at which the proposed development would first be visible in its entirety; and
- Operation – the point in time at which the proposed development would be visible, following further growth of any existing or new vegetation within the landscape.

7.7 The predicted impacts on landscape and visual resources as a result of the Proposed Project may include the following:

- Short term/ temporary and reversible, direct loss or alteration of landscape elements or features;
- Long term/ permanent, direct loss or alteration of landscape elements or features; and
- Changes to visual amenity through the removal or introduction of built and natural components in the landscape.

7.8 Based on information available at this interim stage in the design and assessment process, the significant effects likely to arise during construction and operation of the Proposed Project are outlined below.

Construction:

7.9 Construction impacts will vary depending on the nature of operations being carried out. The principal elements of construction relevant to the assessment include:

- Site clearance, tree felling and hedgerow removal;
- Topsoil stripping and earthworks;
- Construction of temporary site accesses and haul routes;
- Excavation and installation of drainage and below ground services;

[2] Embedded mitigation is the term given to the mitigation measures developed through the iterative design process, which are integrated into the design and are included in the project description and design and access statement.

- Stockpile and material storage areas.
- General construction activities including the movement of large-scale construction equipment, construction compounds and temporary buildings required for construction, vehicle parking and materials stockpiles;
- Movement of construction related traffic including delivery and removal of material to and from site, off-site road traffic including workers travelling to and from site;
- Construction of buildings;
- Works to landscaped areas; and
- Temporary hoardings and/or security fencing or signage; and
- Construction site lighting particularly during the winter months.

Operation:

7.10 The main sources of likely long term landscape and visual effects arising from the operational phase of the proposed development include the following:

- The phasing of the development over the operational stage;
- The location, scale and design of buildings and structures, including the scale and massing of the development, and choice and colour of materials;
- Details of servicing arrangements, infrastructure/ utilities and/ or other structures;
- Access arrangements and traffic movements;
- Lighting
- Car parking;
- Noise and movement of vehicles in so far as they may affect perception of tranquillity in the landscape;
- Signage and boundary treatments;
- Outdoor activities that may be visible;
- The operational landscape, including landform, structure and ornamental planting and hard landscape features; and
- Land management operations and objectives.

7.11 For the purpose of the EIA Scoping, maximum heights for the development have been assumed to be as follows:

- *Residential – mix of dwelling types up to 3 storeys – worse-case height 13.5m*
- *Commercial and School – up to 13.5m*
- *Employment – up to 20m*

## Summary of Baseline Work Completed to Date

7.12 Initial scoping work has included a review of the emerging Masterplan Proposals, informal discussions with Barnsley Council and a brief desk top assessment of the following publicly available information sources:

- OS maps (1:25,000);
- GIS data (Natural England and English Heritage);
- National Character Profile 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield (Natural England, 2013);
- Barnsley Borough Landscape Character Assessment (published in 2002, and later revised in 2016); and
- Google Earth Pro.

7.13 A summarised appraisal of the baseline conditions is provided below, based on desk studies. This initial baseline work will be verified as part of future site visits, and expanded on as part of the assessment.

Site Description:

7.14 The application site covers an area of approximately 116 hectares, and comprises gently rolling urban fringe arable farmland, enclosed by buildings and transport corridors. Most of the application site is farmland, with riparian woodland (Craven Wood) following a small stream valley along the eastern boundary of the site. Hermit Lane crosses the application site, running from south west to north east. The only buildings within the application site are the small farm complex of Hermit House Farm, which is located directly to the south of Hermit Lane in the central part of the application site.

7.15 The large-scale field pattern to the north of Hermit Lane shows evidence of intensive farming practices with field amalgamation and hedgerow fragmentation. This differs from the medium-scale and irregular field pattern to the south, which is defined by taller hedgerows, hedgerow trees, linear woodland, and field boundary trees.

7.16 The farmland of the application site is bounded by the coalesced settlements of Higham to the west, Barugh Green to the north west, and Gawber to the east (which comprises Redbrook to the north east and Pogmoor to the south east). The topography within these surrounding areas is more undulating, compared to the gentle contours of the farmland within the application site. The townscape character of some of these areas appears broadly similar, with the predominately 1950s-60s detached residential properties within Gawber and Higham being of a

similar appearance and character. This contrasts with the larger-scale commercial and light industrial buildings within and adjacent to Barugh Green and Redbrook, to the north of the application site.

7.17 The northern and southern boundaries of the application site are defined by the A635 Barugh Green Road to the north, and the M1 motorway in vegetated cutting to the south.

7.18 The topography becomes more undulating within beyond the application site, with the land rising to localised high points at Mapplewood to the north, and Dodworth to the south.

7.19 The application site affords mainly open views, although the nearby settlements and woodland to the east of the site enclose some outward views. A number of public rights of way (PRoW) cross the application site, and have connectivity to the wider PRoW network.

7.20 The application site does not form part of any national or regional landscape designations. There is a Grade II listed structure (mid to late C19th milepost) that lies adjacent to the northern boundary of the application site, along the A635 Barugh Green Road. A small area of woodland covered by a Tree Preservation Order (TPO), falls just inside the eastern boundary. With the exception of these two constraints/ considerations there are no other landscape or landscape-related designations within or adjacent to the site. Valued landscape features within the site boundary comprise areas of woodland to the east

7.21 Beyond the application site, within the study area, there are a number of sensitive heritage assets, including several Scheduled Monuments, Registered Parks and Gardens, and listed building/ structures. It is assumed that effects on the setting of these assets will be considered in the Cultural Heritage Assessment. The LVIA will consider these assets in relation to making judgements on landscape value and in terms of potential effects on people visiting those assets which are publicly accessible.

Landscape Character:

7.22 A high level review of the landscape character of the application site and the wider study area has been carried out to provide initial baseline information.

7.23 At a national level, the application site falls within the National Character Profile 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield (Natural England, 2013). In summary, the key characteristics of this broad area are:

- 'A mixed pattern of built-up areas, industrial land, pockets of dereliction and farmed open country;
- Small, fragmented remnants of pre-industrial landscapes and more recent creation of semi-natural vegetation …; and
- Many areas affected by urban fringe pressures creating fragmented landscapes, some with a dilapidated character…'.[3]

7.24 At a local level, the application site has been assessed by Barnsley Council, within the Barnsley Borough Landscape Character Assessment (published in 2002, and later revised in 2016). This shows that the application site lies within an area categorised as Landscape Area E2 (Barnsley Settled Wooded Farmland), which falls within the wider Landscape Type E (Settled Wooded Farmland).

7.25 The key characteristics of this Landscape Character Area are identified to be:

- 'Gently rolling landform sloping towards the Rivers Dove and Dearne;
- Diverse range of land use, including agriculture, recreation, residential, industry, communication and landscape renewal;
- Dominant presence of urban development;
- Sense of urbanisation with urban fringe pressures and skyline views of settlements;
- Isolated pockets of farmland with farmsteads;
- Fields, predominantly pasture, bounded by fences and poorly managed hedgerows;
- Traditional mining settlements lie within the character area - Dodworth, Barugh, Barugh Green, Higham and Barnsley;
- Evidence of past and present industrial activity due to presence of reclaimed tips and working warehouse units on settlement edges;
- Some areas of scrubby, compartmentalised field units adjacent to settlements at the urban interface; and
- Urban Greenspace running into the urban fabric of Barnsley and having a variety of uses, but predominantly recreational'.[4]

7.26 Barnsley Borough Landscape Character Assessment judged the condition of the character area (Barnsley Settled Wooded Farmland) to be poor and the overall landscape sensitivity and capacity to accept built development to be medium.

3 Page 6, National Character Profile 38: Derbyshire and Yorkshire Coalfield, Natural England (2013)
[4] Page 147, Barnsley Borough Landscape Character Assessment, Barnsley Council (2002)

This was due to limited visibility between other character areas due to its enclosure, and that, '*built development would not have a large adverse effect on the landscape character*.'[5]

7.27 A more detailed assessment of the landscape character will be carried out as part of the assessment process. As agreed with Barnsley Council (during informal scoping discussions) the LVIA will quantify the proposed amounts of removal/ reinstatement/ introduction of landscape features in the assessment (such as hedgerows/ trees/ fields) and changes arising from this would be assessed in terms of effects on landscape character.

Visual Amenity:

7.28 An initial review of the potential visibility of the development within the surrounding context has been undertaken as part of this desk study. Initial desk top studies indicate that the application site is relatively well-contained from a visual perspective. Although elevated parts of the application site to the south are potentially the most visible, distant views from outside the site are limited and often obscured by intervening settlement and landform. There are frequent close up views of the site from the edges of the nearby settlements.

7.29 Due to the urban/ industrial character of the surrounding settlements, existing topography and vegetation cover, a study area of 3 km from the application site boundary is considered appropriate for the visual assessment. The focus of the assessment of effects on visual amenity will therefore be based on receptors located within a Zone of Theoretical Visibility (ZTV) within a 3 km study area the communities of Gawber, Pogmoor, Barugh Green, Higham and recreational receptors using PRoW). However, the visual assessment will also consider particularly sensitive receptors up to 5 km. This will include existing settlements and visitors to Registered Parks and Gardens such as Cannon Hall, Wentworth Castle and Locke Park.

7.30 Early scoping discussions with Barnsley Council have informed the selection of 14 representative viewpoints which will accompany the LVIA. These have been selected to represent key views and receptor groups within the study area. The provisional viewpoints proposed for assessment in the LVIA, are presented on a Figure included at **Appendix 4**, and are listed below:

[5] Page 150, Barnsley Borough Landscape Character Assessment, Barnsley Council (2002)

- Viewpoint A- (off Higham Common Road looking east) representative of views from nearby residential receptors. *Note: this would also represent views from recreational users of a nearby proposed Greenway*;
- Viewpoint B- (near to junction of Higham Common Road and Hermit Lane, looking east) representative of views from nearby residential receptors;
- Viewpoint C- (from field access off Welland Road) representative of views from nearby residential receptors;
- Viewpoint D- (from junction of Avon Close and Darton UD 11 Footpath) representative of views from nearby residential receptors, and recreational users of PRoW;
- Viewpoint E- (from Cawthorne Road, close to junction with Cannon Way, adjacent to Grade II listed structure (mile post)) representative of views from nearby residential receptors, and setting of listed structure;
- Viewpoint F- (at junction of Cawthorne Road and Claycliffe Avenue) representative of views from nearby residential receptors;
- Viewpoint G- (from St Thomas's Road) representative of views from nearby residential receptors, and informal recreational space;
- Viewpoint H- (from Darton UD 12 footpath, near to junction with Darton UD 11 Footpath) representative of views from nearby residential receptors, and recreational users of PRoW;
- Viewpoint I- (from Barnsley County Borough Footpath 248, near to junction with Barnsley County Borough Footpath 254) representative of views from nearby residential receptors, and recreational users of PRoW;
- Viewpoint J- (from junction of Dury Farm Court and Barnsley County Borough Footpath 248) representative of views from nearby residential receptors, and recreational users of PRoW;
- Viewpoint K (from junction of Beaumont Road and Bence Lane) representative of views from nearby residential receptors;
- Viewpoint L (from junction of B6131 Darton Lane and Pye Avenue) representative of views from nearby residential receptors;
- Viewpoint M (from Registered Park and Garden of Cannon Hall (also a Grade II* listed building)) representative of views of recreational users of landscape and hall, and setting of RP&G and listed building; and
- Viewpoint N- (from M1 motorway) representative of views of transport users.

7.31 All the viewpoints used for the assessment of visual effects are in publicly accessible locations and were chosen to represent the range of visual receptors and types of view likely to be experienced within the surrounding area. The area around each broad viewpoint location was explored to find the most suitable (i.e. unscreened and representative) and safe location for the view to be recorded and photographed.

7.32 As discussed with Barnsley Council, there are health and safety implications associated with capturing viewpoint photography from a motorway location.

Therefore, Viewpoint N may need to be assessed using Google Streetview imagery, but will also be reviewed from nearby locations such as from the Higham Common Road bridge.

7.33 The LVIA will explain the rationale behind the choice of these viewpoint locations and will also explain other locations that have/ may be considered and why they have been discounted (i.e. due to distance, intervening vegetation, buildings etc.). As discussed with Barnsley Council, careful consideration will be given to views from adjacent communities.

7.34 It is proposed that visualisations for all viewpoints are produced in line with Visualisation Type 1[6] of the latest guidance to provide annotated viewpoint photographs for each viewpoint.

7.35 In addition, it is proposed that 3D massing montages are prepare for four viewpoint locations, in line with Visualisation Type 3 of the latest guidance, and that they are presented at operation year 1 (worst case scenario), year 5 and year 15 to demonstrate the beneficial effects of the maturing of landscape proposals/ mitigation. This is considered an appropriate approach bearing in mind that this is an outline application. The massing montages will be presented as a stand-alone document to accompany the planning application. As discussed with Barnsley Council the photomontages will be produced from four viewpoint locations:

- Viewpoint A or Viewpoint B;
- Viewpoint D;
- Viewpoint G or Viewpoint H; and
- Viewpoint I or Viewpoint J.

7.36 These viewpoints will be reviewed for their suitability for representation by visualisation following site surveys to assess the scheme visibility. Further detail on the likely detail level, and the methodology for production of these visualisations is given in the section below.

## Overview of Approach and Methodology for Production of ES Chapter

7.37 The assessment will be carried out by chartered landscape architects in accordance with current best practice 'Guidelines for Landscape and Visual Assessment Third Edition' (GLVIA3) published in April 2013 by the Landscape

[6] Visual Representation of Development Proposals LI TGN 06/19

Institute and Institute of Environmental Management and Assessment. This is a widely accepted guidance document for landscape and visual assessment. Utilising this, the assessment will comprise the following:

- Baseline including description of current conditions and review of landscape planning policy;
- Assessment of landscape effects;
- Visual effects; and
- Landscape mitigation proposals.

7.38 The proposed study area for the LVIA is the area within which likely significant landscape and visual effects may occur. This extends to 3 km from the application site boundary. As noted previously, the extent of the proposed study area has been informed by an initial desk top appraisal of the site and its surrounding environs and reinforced by previous professional experience. The LVIA will assess landscape and visual baseline conditions and potential effects within this study area, whilst also considering particularly sensitive receptors up to 5km from the site.

7.39 Following on from the initial baseline work, a desk-top study will be undertaken. This will include a review of policies relating to landscape and visual issues, from national to local levels. A Geographic Information System (GIS) terrain model generated from Ordnance Survey data together with anticipated massing information of the proposed Development (based on maximum parameters) will be utilised to produce a Zone of Theoretical Visibility (ZTV), which together with the initial visual baseline work, will inform the visual assessment. Once this is finalised, field surveys will be carried out to verify the desk based work, define the visual envelope of the application site, and to identify the character of the application site and the surrounding landscape.

7.40 As part of this request for a Scoping Opinion, we kindly request Barnsley Council's feedback on the provisional list of viewpoints (listed within the previous section above), to allow the requisite baseline work to be carried out. Further site visits will then be undertaken to micro-site these viewpoints, and to undertake the initial assessment and photography for each.

7.41 Following the site visits, a baseline assessment will be undertaken, describing the existing landscape and visual conditions of the application site and study area, noting key receptors and assigning levels of value, susceptibility and sensitivity to both the landscape and views. The findings will then inform the design of the

Proposed Project, by identifying landscape features of value and sensitive views, and outlining potential opportunities and constraints to development.

7.42 A robust assessment of the proposals shown within the EIA Parameters Plan, and their impact on the existing landscape and visual context will be undertaken in accordance with a systematic methodology and accompanied by supporting technical figures. The assessment will identify the nature, extent and significance of impacts based on the planning application drawings. Where significant adverse impacts are identified, appropriate mitigation measures will be recommended.

7.43 The LVIA will assess both the proposed site remodelling and construction works and the completed scheme at their respective 'worst case' points in time. The implications of the respective phases (Phases 1a to 3, as detailed under Section 3.16 of this report) will be described in broad detail within the Visual and Landscape aspects of the report. However the LVIA will focus its assessment work on two key periods: the apex of the site remodelling and construction work onsite (thought to be during Phase 1a at point of writing), as well as the 'worst case' maximum proposed parameters (as defined within the project Parameters Plan) of the completed scheme.

7.44 A cumulative assessment of the application (App 2020/0977) immediately to the north-west of the site, as described in Section 2.12 of this report, will also be included within the LVIA.

7.45 Four visualisations (massing montages) will be prepared for the project. The suggested locations of these have been provisionally agreed with Barnsley Council (as detailed within previous section). These visualisations will be produced in accordance with 'Visual Representation of development proposals', published in September 2019 by the Landscape Institute. As advocated within the guidance, the type and detail to be shown within the visualisations should be proportionate to the project. As the scheme will be submitted as an outline planning application, a Type 3 visualisation is felt to be most appropriate for the four nominated viewpoints. A previous project example produced by Gillespies has been agreed in principle by Barnsley Council, as representing suitable detail and context. As per previous correspondence with Barnsley Council (and detailed within the previous section), the visualisations produced will be provided as a document, separate to the ES.

## Significance Criteria to be used

Determining Sensitivity:

7.46 Landscape sensitivity is the degree to which a particular landscape character type or area can accommodate change without unacceptable harm to its character. Sensitivity is not absolute but varies according to the type of change being considered. In this case, it is the sensitivity of the landscape to the development of the Proposed Project that is considered rather than to the landscape's inherent sensitivity to any change. Judgements on sensitivity are made based on consideration of value and susceptibility.

7.47 Because landscape characteristics and values do not readily lend themselves to scoring, and different criteria may carry different weights in different types of landscape, no absolute assessment of sensitivity is presented for the application site. Instead, professional judgement supported by reasoned explanation and using bespoke criteria will be used to provide an overall of sensitivity.

7.48 In determining visual sensitivity, judgements are first made about the susceptibility of each visual receptor to the type of change arising from the proposed development. The susceptibility of visual receptors is typically a function of the occupation or activity of people experiencing the view at a particular location and the extent to which their attention or interest may therefore be focused on the view and the visual amenity they experience. For example residents have prolonged viewing opportunities and are more likely to be interested in their surroundings than people using sports pitches or working indoors, whose attention is likely to be focussed on their activity rather than on the view. For each viewpoint the judgements on the value of the view (as defined in the baseline study) and susceptibility of the visual receptors are combined into an overall judgement on visual sensitivity.

7.49 Prediction of the likely magnitude of landscape and visual change combines the judgements about the size and scale of the likely effect and the geographical extent of the area over which it occurs. When predicting magnitude of likely change the design proposals or embedded mitigation are taken into account.

7.50 The magnitude of likely change is determined by considering the predicted deviation from baseline conditions and the scale of the effect arising from the proposed development. In the case of landscape and visual effects, this can only be assessed qualitatively, but is usually based on a consideration of the following

factors:

- The design and siting of the development;
- The angle of view in relation to the main activity of the receptor, the extent of area over which the change would be visible and the distance between the viewer and the development;
- Changes to the composition of the view, including the loss or addition of features in the view and the proportion of the view occupied by the development.
- How well the development blends into the landscape or view in terms of form, scale and mass, line, height, colour and texture; and
- The duration of the effect - whether the change is temporary or permanent, intermittent or continuous etc.

7.51 Paragraph 5.37 of GLVIA3 notes that it is important to understand the degree to which the proposal fits with existing character; and the contribution to the landscape that the development may make in its own right, usually by virtue of good design, even if it is in contrast to existing character.

7.52 To draw final conclusions about the likely level and significance of landscape and visual effects, the separate judgements about the value and sensitivity of the individual landscape and visual receptors and the magnitude of each effect are combined.

7.53 Assessment of the likely level and significance of landscape or visual effects requires the application of professional judgement to weigh the sensitivity of the landscape or visual receptors with the magnitude of predicted change. The broad criteria that influenced the level and significance of landscape and visual effects are set out in Table 7 below. Because different factors may be relatively more or less important depending on the particular location, the presence of any combination of factors which contribute to sensitivity or magnitude is considered when assessing the level (and thus significance) of effect.

7.54 In IEMA's publication, The State of Environmental Impact Assessment Practice in the UK, a range of different factors that should be considered when determining the significance of an effect are identified. These include:

- The legal and policy context, which offers protection to the environment and community;
- Knowledge and experience of significance from previous assessments;
- Details of the development being proposed, such as construction and operational activities, and the nature of the effects associated with such activity;
- Details about the environmental sensitivity of the area that will be affected; and

- Feedback from scoping and consultation often including views from the local community.

7.55 A further consideration is the duration of the predicted change and whether it could be reversed if the proposed development were removed.

7.56 As noted in GLVIA3 (para. 6.44), the relationship between receptors and effects is not generally a linear one and there are no hard or fast rules about what makes an effect significant. In terms of landscape effects, paragraph 5.56 of GLVIA3 notes that at opposite ends of the spectrum:

- 'Major loss or irreversible negative effects, over an extensive area, on elements and/ or aesthetic and perceptual aspects that are key to the character of nationally valued landscapes are likely to be of the greatest significance; and
- Reversible negative effects of short duration, over a restricted area, on elements and/ or aesthetic and perceptual aspects that contribute to, but are not key characteristics of the character of landscapes of community value, are likely to be of the least significance and may, depending on the circumstances, be judged as not significant'.

7.57 In terms of visual effects, paragraph 6.44 of GLVIA3 notes the following:

- 'Effects on people who are particularly sensitive to changes in views and visual amenity are more likely to be significant;
- Effects on people at recognised and important viewpoints or from recognised scenic routes are more likely to be significant; and,
- Large-scale changes which introduce new, non-characteristic or discordant or intrusive elements into the view are more likely to be significant than small changes or changes involving features which are already present within the view'.

<u>Significance of Effects:</u>

7.58 The final judgment on whether each effect should be considered significant relies on informed professional judgement and is supported by descriptive text to draw out the key issues, describe the effects and explain the underlying rationale.

7.59 Similarly in making a judgement about the significance of visual effects GLVIA3 (Paragraph 6.44) notes that:

- Effects on people who are particularly sensitive to changes in views and visual amenity are more likely to be significant
- Effects on people at recognised and important viewpoints or from recognised scenic routes are more likely to be significant
- Large-scale changes which introduce new, non-characteristic or discordant or intrusive elements into the view are more likely to be significant than small changes or changes involving features already present within the view

7.60 The table below will be used as guidance in the determination of the significance of landscape and visual effects.

**Table 7.1: Definitions of Significance Scale**

| Effect Level and Significance | Definition |
|---|---|
| Major Beneficial<br><br>(significant) | Would considerably improve and enhance the existing landscape character/ landscape setting or view.<br><br>Would restore or reinstate valued characteristic elements/ features entirely or substantially lost through other land uses.<br><br>Would make a substantial positive contribution to local environmental policies for the protection and enhancement of the landscape. |
| Moderate Beneficial<br><br>(significant) | Would markedly improve and enhance the existing landscape character/ landscape setting or view.<br><br>Would restore or enhance valued characteristic elements/ features largely lost through other land uses.<br><br>Would make a positive contribution to local environmental policies for the protection and enhancement of the landscape. |
| Minor Beneficial | Would slightly enhance the existing character/ landscape setting or view. |
| Negligible | Would be compatible with the existing character/landscape setting or view. |
| Minor Adverse | Would be slightly at variance with the existing character/ landscape setting or view.<br><br>Would damage or partially remove some locally valued characteristic elements/features.<br><br>Would cause a perceptible deterioration in the view. |
| Moderate Adverse<br><br>(significant) | Would be at variance with the existing character and/ or setting of the landscape and diminish its integrity.<br><br>Would destroy, degrade or diminish valued characteristic elements/ features (including aesthetic or perceptual qualities).<br><br>Would cause a noticeable deterioration in the view.<br><br>Would potentially be compatible with local environmental policies for the protection and enhancement of the landscape. |

| | |
|---|---|
| Major Adverse<br><br>(significant) | Would be at considerable variance with the existing character and/ or setting of the landscape, degrading its integrity.<br><br>Would permanently destroy, degrade or diminish valued characteristic elements/ features (including aesthetic or perceptual qualities), particularly rare or distinctive landscapes.<br><br>Would cause a substantial deterioration in the view.<br><br>Would conflict with international, national, regional or local environmental policies for the protection and enhancement of the landscape. |

7.61 Each of the four main categories (negligible, minor, moderate or major) covers a broad range of effects and represents a continuum or sliding scale. For this LVIA any residual effect judged to be major or moderate is deemed to be significant.

# 8. ECOLOGY CHAPTER

## Introduction

8.1 Tetra Tech (formerly known as WYG) will be producing the ES Chapter for ecology. This chapter provides the ecology scoping assessment and discusses the potential for the development to significantly affect this aspect of the environment. The chapter provides a summary of the potential effects and how this will be addressed in the EIA and presented in the subsequent ES.

## Description of Potential Effects

8.2 The potential for ecological features to be affected as a result of the proposed development will be assessed, taking into consideration any direct loss of habitats and associated flora or fauna; indirect effects on flora or fauna; effects on any sites of nature conservation importance; and specific effects on protected species, both during the construction and operational phase of the development.

8.3 The effects to be considered will include:

*During the Construction Phase:*

- Disturbance (visual, noise, dust, vibration, lighting on habitats and protected species);
- Permanent and temporary loss and fragmentation of habitat (direct harm to protected species, isolation of protected species); and
- Hydrology and pollution (dust generation, increase surface run-off, pollution of aquatic habitats)

*During the Operational Phase:*

- Permanent land-take (on protected species and habitats)
- Anthropogenic / urban effects (including recreational pressure to designated sites and habitats, disturbance to protected species, predation from domestic pets etc)
- Air Quality / pollution and hydrology (residents, additional traffic)
- Permanent lighting (protected species)
- Noise

## Summary of Baseline Work Completed to Date

8.4 On the basis of a review of the habitats present and the background information for the site (as shown in the 'EIA Scoping – Parameters Plan'), a suite of ecological survey work has been undertaken in order to inform the baseline

assessment of the site, including a desktop study, extended Phase I survey and Phase II protected species surveys, as summarised below:

Preliminary Ecological Appraisal (June 2017)

- An extended Phase 1 survey and desk study was undertaken by AECOM in June 2017, with reference to the *Handbook for Phase 1 habitat survey: A technique for environmental audit* (JNCC, 2010) and *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2013).
- The potential Zone of Influence (ZoI) was considered to be the site and a buffer zone of up to 10km.
- There are no Natura 2000 sites within 10km of the central grid reference for the potential ZoI (SE 31837 07087);
- The are no statutory designated sites within 2km of the central grid reference for the potential ZoI;
- There are three non-statutory sites within 2km of the central grid reference for the potential ZoI (Barnsley Canal at Wilthorpe LWS, Redbrook Pastures LWS and Hugset Wood LWS);
- Nine main habitat types were present on site and included:
    - Plantation broadleaved woodland;
    - Semi-improved grassland;
    - Improved grassland;
    - Marshy grassland;
    - Running water;
    - Standing water;
    - Arable;
    - Hedgerows and trees; and
    - Buildings and hardstanding.
- The potential ZoI was considered to have suitability to potentially support bats (foraging / commuting and roosting), badger, great crested newt, breeding birds, reptiles and brown hare;
- Further surveys were recommended for bats, badger, great crested newt and breeding birds; and
- Best practice / pre-cautionary measures were recommended for reptiles and brown hare.

Hedgerow Survey (June 2018)

- A hedgerow survey was undertaken in June 2018, with reference to the *Hedgerow Survey Handbook. A standard procedure for local surveys in the UK.* (DEFRA, 2007);
- The potential ZoI was considered to encompass the entire site and areas immediately adjacent.
- Approx. one-third of the total number of hedgerows within the potential ZoI were surveyed (assessment of remaining hedgerow on going); and
- None of the surveyed hedgerows are likely to be considered 'Important', with reference to the 'Wildlife and Landscape' criteria of the Hedgerow Regulations.

Badger (June 2018).

- A badger survey of the potential ZoI was undertaken alongside the hedgerow survey in June 2018, with reference to *Surveying badgers. An occasional publication of the mammal society – No. 9.* (Harris, Cresswell & Jefferies, 1989);
- The potential ZoI included approximately one third of the site (which at the time were areas considered to be included in early phases of the development) plus a 50m buffer, where accessible; and
- No evidence of badgers and / or their setts was identified.

Bats (April – September 2018)

8.5 The following bat surveys were undertaken, with reference to *Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd ed.* (Collins, 2016):

*Bat Roost Suitability Assessment*

- A bat roost suitability assessment of all trees and buildings within the potential ZoI was undertaken in May 2018;
- The potential ZoI was considered to encompass the site and areas immediately adjacent; and
- Seven buildings and 25 trees were considered to offer bat roost suitability.

*Bat Roost Surveys*

- Bat emergence and re-entry surveys were undertaken on buildings with bat roost suitability and of trees with greater than 'Low' bat roost suitability; and
- No evidence of roosting bats was recording during the surveys.

*Site-wide Bat Activity Surveys*

- A suite of site-wide bat activity surveys were undertaken from April – September 2018 (inclusive). Each month, these surveys comprised three walked transect surveys and deployment of two remote static detectors;
- Common pipistrelle was the most frequently recorded species, with low numbers of Myotis species, occasional soprano pipistrelles, very rarely noctules and Leisler's Bats were recorded. A single call was attributed to Serotine; and
- Areas considered to be of greatest value to bats were:
    - Hermit Lane and the associated double hedgerow;
    - The long hedgerow running north-south, between the northern site boundary and Hermit Lane.
    - The block of woodland with a stream within in the south-east of the site;
    - Hedgerows and trees in the south-east; and
    - The interconnected section of small hedgerows in the south of the site.

Breeding Birds (March – June 2018)

- A suite of breeding bird surveys were undertaken from March – June 2018 (inclusive), with reference to *Bird census techniques, 2nd ed.* (Bibby et al., 2007) and Bird *monitoring methods a manual of techniques for key UK species* (Gilbert et al., 2002).
- The potential ZoI was considered to encompass the entire site and areas immediately adjacent;
- A total of 44 bird species were recorded during the suite of breeding bird surveys;
- Of these 44 species a total of 11 BoCC Red List, seven BoCC Amber List and 24 BoCC Green List species were recorded;
- Furthermore, a total of eight NERC Act species were recorded during the surveys; however,
- No Schedule 1 listed bird species were recorded breeding within the potential ZoI.

Great Crested Newts (April 2018)

- A pond within the site boundary was assessed to have 'Average' suitability (using HSI assessment methodology) for great crested newts *Triturus cristatus* during the 2017 Preliminary Ecological Appraisal, with reference

to *Evaluating the suitability of habitat for the GCN (Triturus cristatus). Herpetological Journal 10 (4)* (Oldham et al, 2000).

- An Environmental DNA (eDNA) survey was undertaken on this waterbody in April 2018.
- The eDNA test results returned a Negative result for great crested newt.
- As such, great crested newts are considered likely absent from the waterbody.

8.6 The scope of surveys completed up to September 2018, and the respective survey findings, were discussed with the Barnsley Metropolitan Borough Council (BMBC) Biodiversity Officer at the pre-application stage (pers. telephone comms. between WYG (now Tetra Tech) Project Ecologist Jonathan Siberry and BMBC Biodiversity Officer Trevor Mayne – dated 10th September 2019). Further assessments were requested, and comprised:

- Suitability review of garden ponds (located directly adjacent to the site boundary) for great crested newt and consultation with the BMBC Biodiversity Officer;
- Assessment of remaining hedgerows on site to highlight any hedgerows which may qualify as 'Important' under the Hedgerow Regulations (1997); and
- Survey of remaining areas of site for evidence of badger and / or their setts.

8.7 The three further assessments detailed above were undertaken during the 2019 survey season and their findings are summarised below:

<u>Suitability Review of Garden Ponds for Great Crested Newt (2019)</u>

- During this desk-based assessment, using online aerial imagery and mapping, six ponds were located either on or within 500m of the site. This comprised one pond within the site boundary and five ponds within private residential gardens.
- The five garden ponds were considered unlikely to support GCN due to one or more of the following reasons:
    - Limited connective habitat between the site and the garden ponds;
    - No known GCN populations present within habitats suitably connected to the site (within 2km radius of the site); and

- The apparent ornamental nature of the garden ponds (e.g. vertical sides).

- Following consultation with the BMBC Biodiversity Officer (pers. email comms. between WYG (now Tetra Tech) Principal Ecologist Barry Clarkson and BMBC Biodiversity Officer Trevor Mayne – dated 12th & 13th December 2019), surveys for GCN were requested by the BMBC Biodiversity Officer to be undertaken in 2020.

Hedgerow Survey (2019)

- Hedgerows which were not previously assessed by WYG (now Tetra Tech) in 2019 (approximately two-thirds of the total number of hedgerows within the potential ZoI) were subject to a hedgerow survey in October 2019. This survey was undertaken with reference to the *Hedgerow Survey Handbook. A standard procedure for local surveys in the UK.* (DEFRA, 2007)

- Three hedgerows were considered to meet the ecological assessment criteria to qualify as 'Important'; however, due to the survey date (October) falling outside of the main botanical survey season (April – September, inclusive), it was not possible to confirm whether further hedgerows may qualify as 'Important' (as the total absence of botanical species listed under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) could not be confirmed). Therefore, it was recommended that a walkover be undertaken during the main botanical survey season, to confirm the presence / absence of any Schedule 8 listed botanical species.

Badger Survey (2019)

- A badger survey of site areas not previously surveyed by WYG (now Tetra Tech) in 2018 was undertaken alongside the hedgerow survey in October 2019, with reference to *Surveying badgers. An occasional publication of the mammal society – No. 9.* (Harris, Cresswell & Jefferies, 1989).

- No evidence of badgers and / or their setts was identified.

8.8 Following project delays as a result of the Covid-19 pandemic, a full suite of update surveys were undertaken for the site during the 2020 survey season to provide updated baseline information, with reference to the CIEEM's advice note *On the Lifespan of Ecological Reports & Surveys* (CIEEM, 2019). The results of

these surveys, where detailed analysis has been completed to date, are summarised below:

Ecological Appraisal (2020)

- An extended Phase 1 survey and desk study was undertaken by WYG (now Tetra Tech) in June 2020, with reference to the Hand*book for Phase 1 habitat survey: A technique for environmental audit* (JNCC, 2010) and *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017).

- The potential Zone of Influence (ZoI) was considered to be the site and a buffer zone of 15km.
- Three Natura 2000 sites were present within 15km of the potential ZoI (Denby Grange Colliery Ponds SAC, South Pennine Moors SAC and Peak District Moors (South Pennine Moors Phase 1) SPA).
- The were no statutory designated sites within 2km of the potential ZoI;
- There were six non-statutory sites within 2km of the potential ZoI (Redbrook Pastures LWS, Hugset Wood LWS, Daking Brook LWS, Barnsley Canal at Wilthorpe LWS, Silkstone Fall Wood LWS and Falthwaite and Lowe Wood LWS).
- Sixteen habitat types were present on site and included:
    - Plantation broadleaved woodland;
    - Dense scrub;
    - Scattered scrub;
    - Broadleaved scattered trees
    - Hedgerows;
    - Semi-improved neutral grassland;
    - Improved grassland;
    - Marshy grassland;
    - Amenity grassland;
    - Tall ruderal;
    - Running water;
    - Standing water;
    - Dry ditches;
    - Arable;

- Bare ground; and
- Buildings.

Hedgerow Survey (2020)

- An updated hedgerow survey was undertaken in August 2020, with reference to the *Hedgerow Survey Handbook. A standard procedure for local surveys in the UK.* (DEFRA, 2007);
- The potential ZoI was considered to encompass the entire site and areas immediately adjacent.
- The survey comprised a detailed update assessment of the hedgerows which were originally surveyed by WYG (now Tetra Tech) in 2018. This equated to approximately one-third of the total number of hedgerows within the potential ZoI.
- Hedgerows which were originally surveyed by WYG (now Tetra Tech) in 2019 (approximately two-thirds of the total number of hedgerows within the potential ZoI) were subject to a ground-truthing assessment to confirm there had been no significant changes to the hedgerows since 2019. A search of these hedgerows was also made for the potential presence of any botanical species listed under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended).
- Detailed analysis of the updated hedgerow survey results is yet to be completed; however, at least three hedgerows were considered to meet the 'Wildlife and Landscape' criteria of Important hedgerows under the Hedgerow Regulations (1997).

Badger Survey (2020)

- An updated badger survey of the potential ZoI was undertaken alongside the hedgerow survey in August 2020, with reference to *Surveying badgers. An occasional publication of the mammal society – No. 9.* (Harris, Cresswell & Jefferies, 1989).
- The potential ZoI included the site and a 50m buffer from the site boundary, where accessible.
- No evidence of badgers and / or their setts was identified.

Bats (2020)

8.9 The following bat surveys were undertaken, with reference to *Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd ed.* (Collins, 2016):

*Bat Roost Suitability Assessment*

- An updated bat roost suitability assessment of all trees and buildings within the potential ZoI was undertaken in June 2020;
- The potential ZoI was considered to encompass the site and areas immediately adjacent; and
- Seven buildings and 44 trees were considered to offer bat roost suitability.

*Bat Roost Surveys*

- Bat emergence and re-entry surveys were undertaken on buildings with bat roost suitability and of trees with greater than 'Low' bat roost suitability.
- A single common pipistrelle roost (one - three individuals) was recorded within the Redbrook Farm farmhouse. An individual soprano pipistrelle was also noted to have potentially emerged from the farmhouse.
- No other evidence of roosting bats was recording during the surveys.

*Site-wide Bat Activity Surveys*

- A suite of site-wide bat activity surveys were undertaken from June – October 2020 (inclusive). Each month, these surveys comprised three walked transects and deployment of two remote static detectors.
- The absence of survey data from the months of April and May was a result of the Covid-19 pandemic, which caused delays in the overall project timeline.
- Common pipistrelle was the most frequently recorded species, with other species recorded comprising low numbers of *Myotis* species, occasional soprano pipistrelles and rarer occurrences of noctules, Leisler's bats and brown long-eared bat; and
- Areas considered to be of greatest value to bats were:
    - Hermit Lane and the associated double hedgerow;
    - The woodland area in the centre of the site, north of Hermit Lane / Hermit House Farm;
    - The long hedgerow running north-south, between the northern site boundary and Hermit Lane.
    - The block of woodland with a stream within in the south-east of the site;

- The group of smaller, interconnected hedgerows in the north of the site (south of Barugh Green Road); and
- The interconnected section of hedgerows in the south of the site.

Breeding Birds (2020)

- A suite of breeding bird surveys (comprising three survey visits) were undertaken from June – July 2020 (inclusive), with reference to *Bird census techniques, 2nd ed.* (Bibby et al., 2007) and *Bird monitoring methods a manual of techniques for key UK species* (Gilbert et al., 2002).
- The condensed breeding bird survey period was a result of the Covid-19 pandemic, which caused delays in the overall project timeline.
- The potential ZoI was considered to encompass the entire site and areas immediately adjacent.
- Detailed analysis of the breeding bird survey results is yet to be completed; however, no significant differences are anticipated between the 2018 and 2020 survey results (based upon observations made by the surveyor during the surveys).

Great Crested Newts (2020)

- Of the six ponds located on or within 500m of the site, two ponds were accessible for collection of eDNA samples.
- An eDNA survey was undertaken in June 2020 on the pond located on site, as well as a second pond located off site (located in a private residential garden, adjacent to the northern site boundary).
- The eDNA test results were returned as 'Negative' for presence of GCN DNA within both ponds.
- Following multiple attempts to gain access to the other four ponds located within private residential gardens adjacent to the site, access was not provided and therefore eDNA samples could not be collected.
- Although access was not provided to four of the five garden ponds located adjacent to the site, the BMBC Biodiversity Officer was content with the survey effort and the number access attempts made to the garden ponds (pers. email comms. between WYG (now Tetra Tech) Project Ecologist Jonathan Siberry and BMBC Biodiversity Officer Trevor Mayne – dated 14th August 2020).

## Overview of Approach and Methodology for Production of ES Chapter

Further Assessment / Consultation

8.10 No further ecological surveys or assessments are proposed at the site (unless delays result in requirements for baseline data to be updated).

8.11 Consultation will be held with the BMBC Biodiversity Officer and other appropriate parties, where relevant.

Assessment Methodology

8.12 A qualitative and quantitative ecological impact assessment will be undertaken, following the principles set out in the Chartered Institute of Ecology and Environmental Management (CIEEM) publication *'Guidelines for Ecological Impact Assessment in the UK and Ireland'* (CIEEM, 2019), and will include an assessment of cumulative effects, an account of appropriate mitigation measures, and details of any residual effects (should any exist following mitigation).

8.13 Consultation with relevant interested parties, including the Local Authority, will be undertaken to make sure that all issues are covered within the assessment.

8.14 The starting point for any assessment of impacts is to determine which features should be subject to detailed assessment. These will be ecological receptors, present within the ZoI, considered to be important and potentially affected by the project. A maximum ZoI of 15km from the site will be considered in relation international statutory designated sites. Assessments in relation to other individual receptors will be assessed as relevant in view of their baseline evaluation and potential impacts relevant to the proposed scheme.

8.15 Due to the proposed phasing of the development, detailed drawings and development proposals will only be provided for certain areas of the site (subject of Detailed Planning Application). For other areas of the site (subject to Outline Planning Application), general principles will be provided within the submitted planning documents (including only general principles of proposed habitat mitigation). The Ecology Chapter will assess the potential for ecological impacts based upon detailed information where available, or otherwise against the general principles provided within the outline areas.

Additional Elements to be Included as Appendices to ES Chapter

8.16 To support the information detailed with this ES Chapter, the following documents will be included as appendices to the Chapter:

- Preliminary Ecological Appraisal Report;
- Bat Survey Report;
- Hedgerow and Badger Survey Letter Report;
- Breeding Bird Report; and
- Great Crested Newt eDNA Letter Report.

## Significant Criteria to be Used

8.17 The significance of potential effects upon ecological receptors will be determined with reference to the CIEEM Guidelines. Potential effects upon the integrity and conservation status of sites, habitats and species will be determined, as appropriate, and will consider of factors such as extent, magnitude, duration, frequency / timing and reversibility.

8.18 Impacts will only be assessed in detail for receptors of sufficient value that impacts upon them may be significant (in terms of legislation or policy) – i.e. of Local or greater importance and / or where impacts may result in contravention of wildlife legislation.

8.19 Any significant impacts remaining after mitigation (the residual impacts), together with an assessment of the likelihood of success in the mitigation, are the factors to be considered against legislation, policy and development control in determining the application.

8.20 This approach is consistent with the 2017 EIA Regulations, which only require investigation of likely significant effects.

# 9. TRANSPORT CHAPTER

## Introduction

9.1 The Transport Chapter will be prepared by Fore Consulting. Fore Consulting is an experienced team of transport planners and consultants who advise in relation to transport and highways aspects of development proposals and planning applications, as well as major transport schemes and regeneration projects.

9.2 Paul Irwin BSc (Hons), MSc (Eng), MCIHT will be the principal author of this chapter. Paul has over 30 years' experience in transport planning including preparation of EIA. He has provided advice, undertaken option development and prepared Transport Assessments, Travel Plans and inputs to Environmental Statements to support planning applications for a wide range of large scale residential and commercial developments. Paul is supported by a team of transport planners. Recently the team worked on the highways elements of the two applications which have already been approved for works within the Site associated with the delivery of the new Link Road between M1, Junction 37 and the A635, Barugh Green Road (principally comprising of two new roundabouts). The proposed roundabouts provide access to the northern and southern parcels of the site.

## Description of Potential Effects

9.3 The aim of the assessment will be to identify, as far as reasonably possible, the nature of the transport changes within the area of the proposed development, to assess significance and to make appropriate recommendations. The assessment will include consideration of traffic impacts during construction as well as impacts during the operation of the proposed development.

Construction (Remediation Activities)

9.4 A contractor has not yet been appointed to undertake the construction works and no specific detail in terms of the number of vehicles likely to be generated by the construction process is available at this stage. Vehicle movements generated by the construction process are likely to be associated with the delivery of plant and construction materials, as well as construction staff travelling to and from the Site. Consequently, the movement of construction traffic may result in temporary adverse effects on the operation of the local road network (in terms of pedestrian

and driver delay on the main access routes to and from the Site) and may also adversely affect pedestrian amenity, severance, fear and intimidation, and accidents and safety. In addition, construction vehicles could carry mud or dust on to the local road network.

9.5 The potential effects of construction traffic on the main routes to and from the Site shall therefore be considered in the ES Chapter.

Operational Development

9.6 The assessment will include an evaluation of the traffic generated by all pertinent consented developments in the vicinity of the site, these have been agreed with BMBC and Highways England and are summarised in Table 9.1. This will ensure that the EIA appropriately evaluates the cumulative impacts of the scheme in conjunction with other potential developments.

**Table 9.1: Committed Developments**

| Planning Reference | Application Summary |
|---|---|
| 2016/0259 | Smithy Wood Lane - Residential development of 36 dwellings |
| 2016/0268 | Green Road – Residential development of 50 dwellings |
| 2017/1002 | Capitol Park – Development of approximately 7,000 sqm of industrial land use |
| 2016/0713 | Capitol Park Industrial Estate – Outline application for 16,499 sqm GFA of industrial development |
| 2017/0987 | Capitol Park – NHS blood storage facility on Unit C |
| B/04/1998/DO | Capitol Park – Industrial development with a site area of 0.95 hectares |
| 2019/0286 | Capitol Park – Employment development of approximately 16,723 sqm |
| 2020/0977 | Land off Barugh Green Road – Residential development of 140 dwellings |

9.7 It is noted that the application 2020/0977 has recently come forward and therefore had not been previously agreed with BMBC or Highways England during the initial scoping. However, the site forms part of the wider MU1 Local Plan allocation site and will therefore be included in the assessment.

9.8 To establish forecast traffic flows in the 2033 future year without the Proposed Development taking place, predicted traffic associated with all known committed developments have been added to 2019 Base traffic data. The resulting 2033 Do Minimum traffic flows represent a future 'baseline' situation for comparative purposes.

9.9 In order predict the level of traffic that would be generated by the Proposed Development, average person trip rates from the TRICS database have been applied to method of travel to work data from the 2011 Census. The resulting vehicle trip generation has been assigned to routes on the highway network surrounding the Site using a trip distribution derived from 2011 Census data.

9.10 A summary of the predicted highway link flows in the 2033 future year, with and without the Proposed Development taking place, will be provided in the format of 24-Hour (00:00-24:00) AADT data. Data will be presented for total vehicles and for the number of HGVs.

9.11 The potential effects of the Proposed Development will be determined by comparing the 2033 Do Minimum scenario with the 2033 With Development scenario.

9.12 In addition to this, a Phase 1 2026 future year with and without a proportion of the proposed development taking place will also be considered, with the same methodology as the full 2033 assessment.

**Summary of Baseline Work Completed to Date**

9.13 A comprehensive analysis of the baseline transport network will be presented within the Transport Assessment (TA) which will form an Appendix to the ES Chapter. This is summarised in the following sections.

Strategic Road Network

9.14 The site is situated a few hundred metres to the north of Junction 37 of the M1 motorway. The M1 forms part of the Strategic Road Network, connecting London to Leeds, where it joins the A1(M) near Aberford.

9.15 M1 Junction 37 is a four-arm grade separated roundabout with the motorway passing under the junction. The motorway slip roads are all simple Type A merge/diverge with taper. The roundabout has three circulating lanes and is signal controlled.

9.16 M1 Junction 37 provides the main link for all traffic into Barnsley urban area accessing the northern and central parts of the borough, and also the employment sites to the west of the junction. The junction also carries Pennine traffic from the Barnsley and Wakefield areas to Manchester, Manchester Airport and other areas to the west.

Local Highway Network

9.17 The local highway network within the vicinity of the site comprises a number of key links and junctions. These are outlined below:

- A635 Barugh Green Road forms the northern boundary of the site. The single-carriageway road is approximately 7.3m in width and runs from a junction with Redbrook Road in the east (the road name changes to A635 Wilthorpe Road beyond this point) to the Barugh Green crossroads in the west. The road is partially fronted by residential properties, with a number of side roads providing access to light industrial and distribution centres. The speed limit is 40mph along the frontage of the site, reducing to 30mph before the Barugh Green crossroads.
- A637 Claycliffe Road leads north from a roundabout with A635 Barugh Green Road towards the settlement of Darton. It is a single-carriageway road of approximate 7.3m width, subject to a 40mph speed limit. Within the vicinity of the site, the road is mostly lined by industrial and retail uses which are set back from the road.
- A635 Wilthorpe Road is the eastern continuation of A635 Barugh Green Road, leading towards Barnsley town centre from a junction with Redbrook Road. It is a single-carriageway road with residential development set back from the carriageway. The speed limit is 40mph.
- Higham Common Road / Higham Lane is a single-carriageway road linking Barugh Green crossroads in the north with Capitol Park and A628 Whinby Road in the south, via the settlement of Higham and a bridge over the M1. Where the road runs alongside the south-western boundary of the site, the speed limit is 30mph and a bus turning circle is present.
- Hermit Lane dissects the site on an east-west axis. The road name changes to Church Lane where it meets the developed edge of Gawber. The combined route runs from Higham Common Road in the west to a junction with Redbrook Road in the east. At either end it is single-carriageway road with residential frontages and subject to a 30mph speed limit. The central stretch is rural in character and subject to the national speed limit. The road is substandard in geometry and narrow over this stretch, with a 2.3m width limit imposed.
- Redbrook Road is a single-carriageway road of approximate 7.3m width, running from a priority junction with A635 Barugh Green Road to the northeast of the site towards Barnsley town centre, passing by Barnsley Hospital. Almost entirely residential in character, the speed limit is 30mph throughout.
- Pogmoor Road is a residential distributor road running from a crossroads junction with A628 Dodworth Road and A6133 Broadway to the southeast of the site, towards Barnsley Hospital. It is a single-carriageway road, approximately 7.3m in width and subject to a 30mph speed limit throughout.
- A628 Dodworth Road is a major radial route linking Barnsley town centre with M1 Junction 37. In the environs of the site, it is a single-carriageway road varying between two and three lanes. The speed limit is 30mph throughout. A signal-controlled crossroads junction links the road to

Pogmoor Road and A6133 Broadway. At the western end of the route is M1 Junction 37.

- Wharfedale Road is a residential road, running between Church Street in the north and Pogmoor Road in the south. The road is single-carriageway and subject to a 30mph speed limit. Towards its southern end, Wharfedale Road is joined by Farm House Lane which forms a short cul-de-sac, running partially along the eastern boundary of the site.
- A628 Whinby Road is the western continuation of A628 Dodworth Road, linking M1 Junction 37 with settlements to the west of Barnsley and eventually Greater Manchester. The road in the area of the site is of fairly recent construction, being completed to allow the development of the Capitol Park business zone. The road connects Dodworth, the M1, Capitol Park and Higham Lane via a series of roundabouts. The speed limit is 40mph throughout and the road is approximately 7.3m in width.

Pedestrian Network

9.18 The key pedestrian routes and facilities within the vicinity of the site are outlined below:

- Good quality footways are provided along both sides of most local roads, connecting the site to Barnsley town centre and the wider area. Street lighting is present on all of the main pedestrian routes.
- Signal-controlled pedestrian crossing facilities are provided at the Barugh Green crossroads and at locations close to Barnsley Hospital. Elsewhere, uncontrolled crossing points are typically present at junctions and other locations on the local road network where there is an adjacent footpath.
- A public footpath 11 runs across the northern section of the site on an east-west axis between Higham Common Road and Church Street. At the east end, the footpath joins with public footpath 12 adjacent to Redbrook Farm, which provides a route to Redbrook Road.
- A public footpath 248 runs along the southeast boundary of the site and continues north across the site, providing a connection between Pogmoor and Church Street, via Gawber Primary School.
- A public footpath 249 runs northwest from the end of Farm House Lane and joins public footpath 13 which continues west across the site, joining Hermit Lane. A short distance to the east, public footpath 40 heads north from Hermit Lane, joining public footpath 11.
- To the west of the site, and accessible via bridge and underpass crossings of the M1, an extensive network of public footpaths and bridleways provide recreational access to the surrounding countryside.

Cycle Network

9.19 The key cycle routes and facilities within the vicinity of the site are outlined below:

- National Cycle Route 62 passes to the south of Dodworth, approximately 3km to the south of the site, and connects Fleetwood on the Fylde region

of Lancashire with Selby in North Yorkshire. It forms the west and central sections of the Trans Pennine Trail which is a long-distance path running from coast to coast across northern England. The section of National Cycle Route 62 within the vicinity of the site is almost entirely traffic-free between Hadfield and Doncaster.

- The western section of the Trans Pennine Trail travels between Southport and Penistone via Liverpool and Stockport, and passes through the Peak District National park.
- The central section of the Trans Pennine Trail covers a whole network of routes, linking the major urban centres of the region including Sheffield, Rotherham, Wakefield and Barnsley.
- Starting from close to Barnsley Interchange, a local cycle route heads east out of Barnsley town centre, connecting to National Cycle Route 67 in Stairfoot, approximately 5.5km to the east of the site. National Cycle Route 67 runs from Long Whatton near Loughborough to join National Cycle Route 71 near Northallerton in North Yorkshire.
- The Barnsley Cycle Hub is located in Barnsley Interchange and offers a range of cycle support services to Barnsley residents and businesses. Amongst other things, the hub features free secure indoor cycle parking, toilet and shower facilities, and bike servicing and repairs.

Public Transport Network

*Bus Services*

9.20 Details of the existing bus routes within the vicinity of the site, along with location of the nearest bus stop for each service in each direction are as follows:

- To the north of the site, bus stops on A635 Barugh Green Road provide access to services to Barnsley, Kexborough, Mapplewell and Wakefield.
- To the northeast of the site, bus stops on A635 Wilthorpe Road provide access to the Number 97 service which operates between Darton and Wakefield.
- To the southeast of the site, bus stops on Pogmoor Road provide access to the Number 43 and 44 services which operate between Barnsley and Pogmoor.
- To the south of the site, bus stops on A628 Dodworth Road provide access to services to Barnsley, Silkstone and Penistone.
- Table 9.2 provides a summary of the services available from the bus stops outlined above, including details of the typical frequencies and destinations served.

**Table 9.2: Bus Services, Destinations and Frequencies**

| Nearest Bus Stop to the Site | Service Number | Route Summary | Daytime Service Frequency | | |
|---|---|---|---|---|---|
| | | | Mon-Fri. | Saturday | Sunday |
| A635 Barugh Green | 92/92A | Barnsley - Gawber – Barugh - Higham - Cawthorne | 60 minutes | 60 minutes | 120 minutes |
| | 93/ 95 | Barnsley - Gawber - Wilthorpe | 10 | 15 | 30 |

| | | | | | |
|---|---|---|---|---|---|
| Road | | (95) - Barugh - Darton - Kexborough (95) | minutes | minutes | minutes |
| | 94A | Barnsley - Gawber - Cawthorne | 3 services a day | 2 services a day | 120 minutes |
| | 96 | Barnsley – Kexborough - Wakefield | 60 minutes | 60 minutes | 120 minutes |
| A635 Wilthorpe Road | 97 | Darton – Staincross - Woolley - Sandal - Wakefield | 3 per day | - | - |
| Pogmoor Road | 43/44 | Barnsley - Worsbrough Common - Kingstone - Pogmoor | 30 minutes | 30 minutes | 60 minutes |
| A628 Dodworth Road | 20/21/ 21A/22 | Barnsley - Gilroyd (21A/22) - Silkstone (20/21/21A) - Hoylandswaine (20) - Silkstone Common (21/21A) - Oxspring (21/21A) - Cubley (20/21A) - Penistone (20/21/21A) - Millhouse Green (21/21A) | 15 minutes | 15 minutes | 60 minutes |

*Note: Services correct as of Nov 2020 and may be temporary timetables as a result of Covid-19.*

9.21 In addition to the bus services set out in Table 9.2, a number of dedicated school bus services pass within close proximity of the site. These services are as follows:

- The Number 478 and 479 services to Horizon Community College can be accessed from Pogmoor Road and A628 Dodworth Road, respectively.
- The Number 483 and 489 services to Darton College can be accessed from Higham Common Lane and A635 Wilthorpe Road, respectively.
- The Number 408, 410 and 422 services to Penistone Grammar School can be accessed from A628 Dodworth Road. In addition, the Number 412 and 417 services to Penistone Grammar School can be accessed from A635 Barugh Green Road and Higham Common Lane, respectively.

*Rail Services*

9.22 National rail services in the vicinity of the site are available from Barnsley Interchange and Dodworth Rail Station.

9.23 Barnsley Interchange is located approximately 3km to the east of the site. The station is served by regular services on the Hallam and Penistone Lines, with all passenger services being operated by Northern. On the Hallam Line, Monday to Saturday, there are three trains per hour northbound to Wakefield Kirkgate and Leeds. On the Penistone Line, there is an hourly service northbound to Huddersfield. Southbound there are four trains per hour in combination. Three of these services terminate at Sheffield, whilst one carries on to Nottingham.

9.24 Dodworth Rail Station is located approximately 2km to the southwest of the site and is served by regular services on the Penistone Line. On Mondays to

Saturdays, trains operate hourly towards Huddersfield westbound and to Barnsley and Sheffield eastbound.

**Overview of Approach and Methodology for Production of ES Chapter**

9.25 The ES Chapter and its accompanying Transport Assessment (TA) Appendix will follow the guidance set out in Planning Practice Guidance[7]. The TA will include sections on relevant transport planning policy; accessibility by all modes, and assessment of the impact of the development on the safe operation the local highway network.

9.26 Changes to the transport network to mitigate the impact of the development may involve:

- A schedule of phasing for the identified improvements.
- A construction protocol to set out how the construction traffic would be managed to mitigate any adverse impacts.

9.27 The methodology and scope of the TA that would be necessary for the application has been discussed previously with BMBC, with an agreement reached regarding the scope of the assessments to be undertaken. For the planning application it is anticipated that the TA for the proposed development will comprise the following:

- Identification of the scope of the assessment area.
- Determination and identification of the existing (baseline) conditions on the local highway network.
- Assessment of the impact of forecast trips on the local transport network; associated with the future provision of the new link road.
- Identification and assessment of mitigation measures either to be provided as part of the proposed development or to be delivered separately (including off-site highway works where necessary).

9.28 In considering the effects of the development proposals, the weekday AM and PM peak periods (07:00 to 10:00 hours and 16:00 to 19:00 hours) will be considered. These periods represent the maximum effect expected on the local transport network from the development, associated with existing and future peak patterns of demand and development-related trips.

9.29 The following scenarios have been considered and take into account overall cumulative effects of the overall proposal (i.e. the completed link road between

[7] *Department for Communities and Local Government, 2014, 'Travel Plans, Transport Assessments and Statements in Decision-Taking', Planning Practice Guidance.*

the Barugh Green Road and the Higham Common Road roundabouts and the SCRIF funded highway improvements):

- 2019 Base Year.
- 2026 Phase 1 Do Minimum – (no link road, roundabouts or MU1 development).
- 2026 Phase 1 With Development – Some development at the MU1 site is built out and occupied before the link road is completed.
- 2033 Future Year Do Minimum (no link road, roundabouts or MU1 development).
- 2033 Future Year With Development (including both roundabouts, link road and MU1 development).

**Significance Criteria to be used**

9.30 The IEMA guidelines set out a methodology for assessing potentially significant environmental effects where a proposed development is likely to give rise to changes in traffic flows.

9.31 For the purposes of the ES chapter, consideration will be given for the following environmental issues identified in the IEMA guidance:

- Severance.
- Driver Delay.
- Pedestrian Delay.
- Pedestrian Amenity.
- Accidents and Safety.
- Hazardous Loads.
- Dust and Dirt.

9.32 The study area of the transport-related elements of the ES will be determined in accordance with the recommendation of the "Guidelines for Environmental Assessment of Road Traffic".

9.33 The sensitive receptors will be determined with reference to the criteria set out within the same document and will be identified within the course of the assessment.

9.34 The mitigation measures necessary to ensure that the potential transport effects of the proposed Development remain within acceptable parameters will be determined with respect to the assessment of the predicted operation of the transport network - including travel demand management measures, as well as potential improvements to the pedestrian and cycle network, public transport services and facilities, as well as highway junctions and links.

9.35 The ES chapter will reflect the findings of the TA, whilst assigning levels of significance to the perceived effects. The chapter will set out the requisite mitigation measures and the residual effects once these are incorporated into the proposals.

9.36 In accordance with IEMA guidelines, in the absence of established significance criteria for traffic and transport effects, professional judgement will be used to assess the significance level attributed to the impacts of the development.

9.37 The magnitude of the potential impact on traffic on the local highway network will be considered in respect of the percentage impact of the development traffic against the baseline traffic flows whilst the sensitivity of the receptor will be considered in respect of the operational capacity of the junctions on the study network.

9.38 The magnitude of the potential impact on accidents and safety will be considered in respect of the percentage impact of the development traffic against the baseline traffic flows whilst receptors of accidents will be considered to be of high sensitivity.

9.39 The magnitude of the potential impact on sustainable travel will be considered in respect of the additional traffic volumes on the surrounding public transport and pedestrian and cycle network, whilst the sensitivity of the receptor will be considered broadly in terms of the quality of the infrastructure and pleasantness of journeys.

# 10. ARCHAEOLOGY AND CULTURAL HERITAGE CHAPTER

## Introduction

10.1 The Cultural Heritage Chapter will be prepared by Jim Bonnor of Prospect Archaeology Ltd. Prospect Archaeology has collaborated in the production of numerous Environmental Impact Assessments. Jim Bonnor has worked in professional development led archaeology for over thirty years and has been responsible for writing, and providing critical input into, ES chapters for a number of large residential developments and major cross-country infrastructure projects in Yorkshire and across the country. Jim has a BSc in Archaeological Science and a post-graduate diploma in Archaeology.

## Description of Potential Effects

10.2 Cultural heritage assets can be both directly and indirectly affected.

10.3 Direct effects can take the form of the removal of, or damage to, heritage assets during construction through ground disturbance associated with landscaping, foundations, infrastructure and services, or through demolition and alterations to existing structures, as well as through vibration and pollution damage from construction traffic or during operation. Such effects can lead to the loss of the assets themselves and the information they hold (adverse). Alternatively, the effects may involve the preservation or conservation of an asset and/or raising greater public awareness of its significance (beneficial).

10.4 Indirect effects relate to how an asset is viewed and experienced. Potential changes in the landscape, such as construction of buildings or landscaping, may remove associations between assets, or landscape features, critical to the understanding and appreciation of those assets (adverse). Conversely, effects may create opportunities for the enhancement of an asset's setting, such as the removal of incongruous structures, the opening up of views to an asset or provision of interpretation (beneficial).

## Summary of Baseline Work Completed to Date

10.5 A desk-based assessment has been completed and has involved the consultation of the South Yorkshire Historic Environment Record, Barnsley Archives and Local Studies Centre Service and the Sheffield City Archives Service as well as

secondary and online sources and a site walk over (a full list of sources and results can be found in the report included at **Appendix 6**).

10.6 Five designated assets have been identified within the study area. These include four mileposts, and a barn, all listed grade II. A further 14 undesignated assets have been identified in the study area from the South Yorkshire HER, though none of these are within the site. Some of these relate to enclosures and field systems of probable late prehistoric and/or Roman period date. Flint finds of possible early prehistoric date and a single Roman coin have been found. Documentary research suggests the site may contain Early Medieval boundaries and possible later Medieval farm buildings at Hermit House Farm and to the West of Pogmoor where there is a wall foundation. Ridge and furrow is recorded to the west of the site. Post-medieval assets relate mainly to industrial activity: Gawber glasshouse, Redbrook Mill, Barnsley canal and shaft mounds to the west. There were mine access shafts at various locations on the site and a stone kerbed track follows the Dodworth/Barnsley township boundary through the site.

10.7 Considerable areas of the site have been subject to opencast mining in the middle years of the 20th century. Some of the areas appear to conflict with some cartographic and archaeological evidence. Any remains at Hermit House Farm have been damaged by modern buildings.

10.8 The site has a Moderate to High potential for remains of the later prehistoric, Roman and Medieval periods of up to Regional significance. Locally significant remains can be expected for the Early Medieval and Post-medieval period in the form of boundaries, water management features and the kerbed trackway.

10.9 A grade II listed milepost will be directly affected by the proposed development. It has already been agreed to move this milepost to a new location as part of the related application for works associated with a new roundabout within the Site. Listed Building Consent was granted for the relocation of the milepost on 27/11/2020 (*app 2019/1567*).

**Overview of Approach and Methodology for Production of ES Chapter**

10.10 The ES chapter will be based upon the desk-based and site walkover already undertaken to inform the desk-based assessment. This has involved the collection of existing data within a 1000m study area from the site boundary and a site visit in order to:

- *Identify those receptors which might be affected either directly or indirectly by the proposals, including built and buried heritage as well as the potential for unknown archaeological remains.*
- *Provide an evaluation of their significance.*
- *Assess the likely scale of impacts, both construction and operational, arising from the proposals.*
- *Outline suitable mitigation measures to avoid, reduce or remedy adverse impacts.*
- *Provide an assessment of any residual impacts that may remain after mitigation.*

10.11 The report in **Appendix 6** is considered to contain the baseline information for the ES chapter. Informal contact has been made with South Yorkshire Archaeology Service to identify the scope and timing of any further surveys or information that they consider should be provided in the ES chapter. They have requested that geophysical survey is undertaken to further identify the Site's archaeological potential. A decision on the need for, or timing of, any further evaluation will be made in the light of the results of the geophysical survey.

10.12 A heritage statement has also been prepared for the related planning application for the construction of the roundabout on Barugh Green Road (A635), which includes all necessary mitigation proposals for the listed milestone. This heritage statement would be included as an Appendix to the ES Chapter. Therefore, on the basis that all matters relating to the listed milestone will have already been addressed in this Appendix, it is proposed that the indirect impacts on all designated assets – listed buildings, conservation areas – is to be scoped out of the EIA.

**Significance Criteria to be used**

10.13 Each area of archaeological potential will be assessed for its archaeological significance in geographical terms (i.e. the archaeological receptors value/sensitivity), although it should be noted that there is no statutory definition for these classifications:

- *International (Very High) - World Heritage Sites (including nominated sites). Assets of acknowledged international importance. Assets that can contribute significantly to acknowledged international research objectives.*
- *National (High) - Scheduled Monuments (including proposed sites), Listed Buildings Grade I and II*(some Grade II). Undesignated assets of*

*schedulable quality and importance. Assets that can contribute significantly to acknowledged national research objectives.*

- *Regional (Medium) - Designated or undesignated assets that contribute to regional research objectives.*
- *Local (Low) - Designated and undesignated assets of local importance. Assets compromised by poor preservation and/or poor survival of contextual associations. Assets of limited value, but with potential to contribute to local research objectives.*
- *Negligible - Assets with very little or no surviving archaeological interest.*
- *Unknown - The importance of the resource has not been ascertained.*

*Significance of Effects*

10.14 The significance of potential environmental effects is determined by two variables:

- *The value and/or sensitivity of the receptor (Archaeological Significance); and*
- *The magnitude of change.*

10.15 Each area of archaeological potential will be assessed for its archaeological significance in geographical terms (i.e. the archaeological receptors value/sensitivity), although it should be noted that there is no statutory definition for these classifications:

- *International (Very High) - World Heritage Sites (including nominated sites). Assets of acknowledged international importance. Assets that can contribute significantly to acknowledged international research objectives.*
- *National (High) - Scheduled Monuments (including proposed sites), Listed Buildings Grade I and II*(some Grade II). Undesignated assets of schedulable quality and importance. Assets that can contribute significantly to acknowledged national research objectives.*
- *Regional (Medium) - Designated or undesignated assets that contribute to regional research objectives.*
- *Local (Low) - Designated and undesignated assets of local importance. Assets compromised by poor preservation and/or poor survival of contextual associations. Assets of limited value, but with potential to contribute to local research objectives.*
- *Negligible - Assets with very little or no surviving archaeological interest.*
- *Unknown - The importance of the resource has not been ascertained.*

10.16 The Significance of the archaeological resource/receptor is correlated against the magnitude of the change on that resource/receptor in order to determine whether

the overall significance of the effect on the receptor will be Neutral, Negligible, Minor, Moderate or Substantial.

10.17 Depending on the nature of the change, the significance of the effect on the environment can range from Adverse to Beneficial and be of a defined duration. For instance, the loss of archaeological remains is always classed as Adverse, while the interpretation of an extant archaeological feature might be seen as Beneficial.

10.18 The assessment is then repeated once the proposals to mitigate the change have been put in place.

- *Substantial Adverse - The development fails to satisfy the subject environmental objective and results in a major deterioration of the environmental context*
- *Moderate Adverse - The development partly satisfies the subject environmental objective but fails to contribute to the environmental context*
- *Minor Adverse - The development partly satisfies the subject environmental objective but fails to fully contribute to the environmental context*
- *Negligible/neutral - The development satisfies the subject environmental objective but neither contributes to nor detracts from the environmental context*
- *Minor Beneficial - The development satisfies the subject environmental objective and contributes to the environmental context*
- *Moderate Beneficial - The development satisfies the subject environmental objective and contributes to the environmental context*
- *Substantial Beneficial - The development satisfies the subject environmental objective and results in a major contribution to the environmental context*

10.19 Assessment of significance carries an intrinsic level of subjectivity. Where an element of choice is shown, this is intended to permit a level of professional judgement with respect to individual assets within what is otherwise an overly mechanistic process.

# 11. GROUND CONDITIONS CHAPTER

## Introduction

11.1 This chapter of the ES will address issues relating to existing geo-environmental conditions at the site, with the aim of ensuring that suitable and safe conditions are achieved for the end-use proposed.

11.2 The range of effects associated with the design, construction and operation of the proposed development will be considered.

11.3 The assessment will consider the environmental site setting of the site in relation to published information on geology, hydrology, hydrogeology and contaminated land issues. The likely impacts of the proposed development on topography, ground stability, soil compaction, re-use of soils and contamination of the site will be considered. The assessment includes the identification of potential impacts resulting from the proposed development, the requirements for mitigation any residual effects and the significance of these effects.

11.4 This chapter will be prepared by JPG (Leeds) Limited and led by Chris Harding who manages a team of fellow Engineers and Technicians. JPG (Leeds) Limited is a multi-disciplinary consultancy with extensive experience of ground condition/contaminated land assessment.

## Description of Potential Effects

11.5 Potential effects which could arise, and which will be addressed in this chapter of the ES will include but not be limited to the following:

- Health and safety risks to workers and site visitors during development works from any existing geotechnical hazards, ground contamination, ground gas or other potentially hazardous materials associated with the ground;
- Health and safety risks to future site users from any existing geotechnical hazards, ground contamination, ground gas or other materials;
- Risks to the site due to the release of any existing contamination;
- Risks to groundwater and surface water due to the release of any existing contamination;
- Risks to groundwater and surface water from potential contamination attributable to construction plant/construction activities;
- Risks to new structures, primarily foundations and services from any geotechnical hazards or ground contamination;

- Risks to existing adjacent structures from any geotechnical hazards or ground contamination associated with the site; and
- Assessment of the opportunities to re-use soil arisings on site and of the appropriate 'management' and disposal of contamination or hazardous waste materials to be removed from the site.

**Summary of Baseline Work Completed to Date**

11.6 Large areas of the Site are underlain by significant thicknesses of non-engineered made ground, consisting of colliery discard associated with backfilled opencast coal mines. The underlying bedrock geology comprises Pennine Middle Coal Measures strata of mudstone, siltstone, sandstone and coal seams. There are 14 recorded mine entries on the Site or within 20m of the Site's boundary. However, it is likely that the majority of these will have been removed as part of the opencast extraction.

11.7 The bedrock geology is classified as a Secondary A Aquifer.

11.8 A geoenvironmental desk study report (referenced JBW/DS/4848.v2, dated July 2019) and a preliminary geoenvironmental ground investigation report (referenced 4848-JPG-SW-XX-RP-G-0603-S2-P01, dated July 2019) have been completed for the overall site by JPG.

11.9 The geo-environmental desk study included the following:

- Site inspection and description;
- Review of contemporary and historical Ordnance Survey publications;
- Obtain a Coal Authority Mining Report and Consultants Mining Report and any Coal Authority abandonment plans;
- Consultations with regulatory authorities, where appropriate;
- Review of geological publications (including hydrology, hydrogeology and soil survey publications, where appropriate);
- Review of the radon status of the site;
- An environmental database search;
- Review of any previous reports provided;
- Outline environmental risk assessment;
- Preliminary recommendations with respect to mining, foundations, ground floor and pavement design;
- Recommendations for further work, where appropriate; and
- Presentation of the findings in a tabular non-technical summary.

11.10 The preliminary geoenvironmental ground investigation comprised the excavation/drilling of 42 exploratory holes across the site. The installation of four extensometers, one within each backfilled former opencast site and the

installation of seven gas and groundwater monitoring wells. Samples of soil and groundwater were obtained and submitted for chemical analysis and geotechnical testing. The extensometers have been monitored three times and the gas and groundwater monitoring wells have been monitored on six occasions. Reporting of the ground investigation included the following:

- A qualitative (Tier 2) contamination screening assessment using source-pathway-receptor linkages;
- Ground gas risk assessment to assess the requirement for ground gas protection measures;
- Assessment of the classification of materials for disposal off-site.
- An assessment of the suitability of the natural strata and made ground soils for use in earthworks.
- Settlement analysis, to include immediate, consolidation and self-weight settlement;
- Coal mining assessment, to include mine entries, underground coal mine workings and highwalls associated with backfilled opencast coal sites;
- Preliminary engineering assessment to include recommendations with respect to earthworks and potential foundations, ground floor and pavement design;
- Comments on the likely requirements for any remedial measures which may be required, to address potential contamination or ground gas issues;
- Recommendations for further work.

11.11 Copies of the geoenvironmental desk study report and preliminary geoenvironmental ground investigation report are available to consultees electronically on request.

11.12 Coal mining risk assessments and coal recovery reports were subsequently prepared by JPG for the overall development site, as detailed below.

- Coal Mining Risk Assessment and Coal Recovery Report. Residential Development Remainder of Site), Barnsley West. Reference 4848-JPG-Z2-XX-RP-G-1101-S2-P01. Dated August 2019.
- Coal Mining Risk Assessment and Coal Recovery Report. Employment Land, Barnsley West. Reference 4848-JPG-Z1-XX-RP-G-1102-S2-P01. Dated August 2019.
- Coal Mining Risk Assessment and Coal Recovery Report. Proposed Residential Development (Pogmoor), Barnsley West. Reference 4848-JPG-Z1-XX-RP-G-1102-S2-P01. Dated August 2019.

11.13 The purpose of the coal mining risk assessments was to:

- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site.
- Use that information to identify and assess the risks to the proposed development from coal mining legacy, including cumulative impact of issues.
- Set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or

demonstrate how coal mining issues have influenced the proposed development.

- Demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

11.14 In addition, the reports commented on the opportunity to recover coal prior to development of the site. These reports are also available to consultees electronically on request.

11.15 Geoenvironmental desk study, coal mining risk assessment and geoenvironmental ground investigation (following targeted ground investigation works) reports have also been produced by JPG specifically in relation to the two new roundabouts on Higham Common Road and Barugh Green Road.

11.16 Extensometer (settlement) monitoring is ongoing with the last visit carried out in May 2020.

**Overview of Approach and Methodology for Production of ES Chapter**

11.17 Further, more detailed targeted, intrusive geoenvironmental investigations will be carried out to further assess the site and identify any areas which present potential geotechnical constraints to the proposed development. Or have the potential to present significant effects which may pose a risk to human health and/or controlled waters. Further targeted geoenvironmental investigation is to include the new link road to the requirements of the Local Authority.

11.18 The assessment will be underpinned by a geotechnical risk register and a conceptual site model (CSM) which will identify potential geotechnical risks and potential contaminant source-pathway-receptor linkages. An assessment will then be made of the likelihood for impacts to arise from the proposed development on the identified receptors and their significance.

11.19 The assessment will consider the following potential risks and associated geotechnical and environmental effects:

- Risks to human health (construction workers, general public);
- Soil contamination;
- Surface water and groundwater contamination;
- Hydrogeological effects (groundwater levels/flow);
- Land stability (associated with opencast excavations, backfill settlement and subsidence);

- Shallow recorded and unrecorded coal workings (including mine entries);
- Foundation design and the creation of preferential pathways;
- Earthworks;
- Significant obstructions present on site, e.g. boulders in the colliery spoil; and
- Concrete design to accommodate sulphate content and acidity of the soils.

## Significance Criteria to be used

11.20 The criteria used to assess receptor sensitivity is described in the table below.

**Table 11.1: Receptor Sensitivity**

| Sensitivity | Characteristics of Receptor | Examples |
|---|---|---|
| High | The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance, with very limited potential for substitution. | Existing residential properties.<br>Principal aquifer with public water supply abstractions.<br>Site is within Inner or Outer Source Protection Zones (SPZ 1 to 2).<br>WFD classification 'High'.<br>Site protected/designated under EC or UK habitat legislation (SAC, SPA, SSSI), Water Protection Zone (WPZ), Ramsar site. |
| Moderate | The receptor/resource has moderate capacity to absorb change without significantly altering its present character, or is of high quality and rarity on regional scale or medium quality and rarity on regional or national scale, with limited potential for substitution. | Principal aquifer providing locally important resource or supporting river ecosystem. Site is within a Catchment SPZ (SPZ 3).<br>Secondary A aquifer with limited water supply abstractions for industrial or agricultural use.<br>Site is within Inner or Outer SPZ (SPZ 1 to 2).<br>WFD classification 'Good'.<br>Local sewerage systems. |
| Low | The receptor/resource is tolerant of change or is of medium quality and rarity on regional scale or low quality and rarity on national scale, with limited potential for substitution. | WFD classification 'Moderate'.<br>Secondary Aquifer with limited water supply abstractions for industrial or agricultural use.<br>SPZ3 (total catchment).<br>Highway areas. |

11.21 The criteria used to assess how far an effect deviated from the baseline condition, i.e. the magnitude of change is described in the table below.

**Table 11.2: Magnitude of Impact**

| Magnitude of Impact | Criteria for Assessing Impact | Examples |
|---|---|---|
| Major | 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 changed. | Change in risk resulting in a change of more than one Flood Zone (e.g. 1-3; 3-1).<br>Additional or fewer properties flooded internally.<br>Failure of utility service affecting a wide area.<br>Increase or decrease in groundwater qualitative or quantitative WFD status.<br>Pollution or loss of potable source of abstraction. |
| Moderate | Loss or alteration to one or more key elements/features of the baseline conditions such that post- development the character/composition/attributes of the baseline will be materially changed. | Change in risk resulting in a change of a single Flood Zone (e.g. 1-2, 2-3).<br>Existing internally flooded properties flooded to a greater or lesser depth. Additional or fewer properties flooded externally.<br>Change in performance of utility service affecting a wider area.<br>Increase or decrease in the yield or quality of an aquifer, but insufficient to change its WFD classification. |
| Minor | 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. | Change in risk but insufficient to change the Flood Zone.<br>Existing external flooding increased or decreased but no change in properties affected.<br>Localised change in performance of a utility service affecting the immediate area surrounding the Site.<br>Localised change in water quality immediately adjacent to the Site.<br>Reversible change in the yield or quality of an aquifer, but insufficient to change its WFD classification. |
| Negligible | Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation. | No/minimal change in flood risk.<br>No/minimal change in utility performance.<br>No/minimal change in water quality.<br>No significant impact on the economic value of the feature.<br>No change to the integrity of an aquifer. |

11.22 The significance of potential effect is derived by considering both the sensitivity of the feature and the magnitude of change, as demonstrated in the table below.

**Table 11.3: Significance of Potential Effect**

| | **Sensitivity** | | |
|---|---|---|---|
| **Magnitude** | **High** | **Moderate** | **Low** |
| **Major** | Major Adverse/beneficial | Major – Moderate Adverse/beneficial | Moderate – Minor Adverse/beneficial |
| **Moderate** | Major – Moderate Adverse/beneficial | Moderate – Minor Adverse/beneficial | Minor Adverse/beneficial |
| **Minor** | Moderate – Minor Adverse/beneficial | Minor Adverse/Beneficial | Minor – Negligible Adverse/beneficial |
| **Negligible** | Negligible | Negligible | Negligible |

## 12. FLOOD RISK AND DRAINAGE CHAPTER

### Introduction

12.1 This chapter of the ES will address the impact of the proposed development on flood risk and local water resources.

12.2 This chapter will be prepared by JPG (Leeds) Limited. JPG (Leeds) Limited is a multi-disciplinary consultancy with extensive experience of flood risk and drainage design including SuDs.

12.3 The assessment will consider all aspects of flood risk in relation to the development site and wider locality. The assessment will review publicly available data and guidance including consultation with various stakeholders. Findings will be presented in the form of a Flood Risk Assessment Report carried out in accordance with NPPF requirements.

12.4 A drainage strategy for the proposed development will be compiled in conjunction with various stakeholder input and will be including a Drainage Strategy/Impact Assessment Report and detailed strategy calculations and drawings.

### Description of Potential Effects

12.5 Potential effects which could arise, and which will be addressed in this chapter of the ES will include but not be limited to the following:

- Review the existing drainage regime and assess the impact the proposed development will have on the existing on and off site drainage systems.
- Investigate the existing drainage systems on the site (land drainage, water courses and public and private piped drainage networks to establish the current drainage regime and identify any potential issues.
- Consider the risk of flooding on the existing site and the impact the proposed development will have on flood risk for the site and wider catchment.
- Review the risk of exceedance flood events on the site and wider catchment.
- Review the risk of pollution both on and off site from activities connected with operations during the construction phase and final as built development.
- Identify risks to the capacity of the offsite foul water drainage infrastructure and safeguarding of this.
- Identify risks to the capacity of the offsite surface water drainage infrastructure as safeguarding this.
- Implementation of SuDs into the proposed system and risks associated with lack of maintenance.
- Health and safety risks to future site users from any proposed drainage features.

## Summary of Baseline Work Completed to Date

12.6 Initial scoping work has included a review for freely available information about the existing drainage regime, including a review of technical, non-technical, legislation, codes, and guidance at both national and local level. This also includes some high-level consultation with stakeholders and site walkover.

12.7 The following documents but not limited too were reviewed as part of the high-level scoping works.

- National Planning Policy Guidance.
- National Design Guide, Planning Practice Guidance for Beautiful, Enduring and Successful Places.
- Flood and Water Management Act.
- Water Framework directive.
- Defra's Non-Statutory Technical Standards for SuDS.
- CIRIA C753 SUDS Manual and various other CIRIA guidance.
- Building Regulations: Approved Document H - Drainage and Waste Disposal 2015 edition.
- BS 8582:2013 Code of Practice for Surface Water Management for Development Sites.
- BSEN 752:2017 Drain and sewer systems outside buildings - sewer system management.
- Barnsley MBC Preliminary Flood Risk Assessment.
- Barnsley MBC Strategic Flood Risk Assessment.
- Barnsley MBC Local Flood Risk Management Strategy.
- Yorkshire Water Guidance on Design of Sewerage Infrastructure.
- Yorkshire Water Guide to the Adoption of New Sewers.
- Sewers for Adoption 6$^{th}$ and 7$^{th}$ Edition and Design and Construction Guidance (CODES).

12.8 A high-level drainage strategy drawing has been complied detailing main infrastructure drainage networks based on initial high-level earthworks proposals to inform the initial cost plan.

12.9 Preliminary attenuation volumes along with anticipated foul water discharge rates have been calculated to inform both the earthworks/levels strategy and initial cost plan.

## Overview of Approach and Methodology for Production of ES Chapter

12.10 A comprehensive analysis of the baseline flood risk and existing drainage networks will be presented within the Flood Risk Assessment (FRA) report and Drainage Impact Assessments (DIA) report. These will form an Appendix to the ES Chapter.

12.11 The following additional works are ongoing or will be undertaken to better understand the likelihood of receptors being impacted and allow for effective mitigation measure to be incorporated into the development.

- Site work over to identify and understand the existing drainage systems and networks both on and off the site.
- Identify where additional detailed drainage survey is required to establish accurate levels and cross sections for ditches, watercourses, and sewers and hydraulic modelling by specialist as required.
- Consultation with stakeholders, LLFA, EA and Local Water Company to establish base line data and agree methodology, discharge rates and locations.
- In conjunction with the Geo-technical consultant review the hydrology and ground conditions to establish areas of concern and establish and mitigation.
- Production of detailed Flood Risk Assessment Report covering all aspects of flood risk on the site.
- Production of detailed Drainage Strategy/Impact Assessment Report.
- Production of detailed calculations and strategy drawings.
- Produce methodology and details for dealing with exceedance events.
- Produce a report on maintenance of the proposed drainage features throughout the lifetime of the development.

12.12 The results of the further assessment will be incorporated into the ES chapter.

## Significance Criteria to be used

12.13 The criteria used to assess receptor sensitivity is described in the table below.

**Table 12.1 Receptor Sensitivity**

| Sensitivity | Characteristics of Receptor | Examples |
|---|---|---|
| High | The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance, with very limited potential for substitution. | Existing residential properties.<br>Principal aquifer with public water supply abstractions.<br>Site is within Inner or Outer Source Protection Zones (SPZ 1 to 2).<br>WFD classification 'High'.<br>Site protected/designated under EC or UK habitat legislation (SAC, SPA, SSSI), Water Protection Zone (WPZ), Ramsar site. |
| Moderate | The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high quality and rarity on regional scale or medium quality and rarity on regional or national scale, with limited potential for substitution. | Principal aquifer providing locally important resource or supporting river ecosystem. Site is within a Catchment SPZ (SPZ 3).<br>Secondary A aquifer with limited water supply abstractions for industrial or agricultural use.<br>Site is within Inner or Outer SPZ (SPZ 1 to 2).<br>WFD classification 'Good'.<br>Local sewerage systems.<br>Water supply networks. |
| Low | The receptor/resource is tolerant of change or is of medium quality and rarity on regional scale or low quality and rarity on national scale, with limited potential for substitution. | WFD classification 'Moderate'.<br>Secondary Aquifer with limited water supply abstractions for industrial or agricultural use.<br>SPZ3 (total catchment).<br>Highway areas. |

12.14 The criteria used to assess how far an effect deviates from the baseline condition, (i.e. the magnitude of change) is described in the table below.

## Table 12.2: Magnitude of Impact

| Magnitude of Impact | Criteria for Assessing Impact | Examples |
|---|---|---|
| Major | 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 changed. | Change in risk resulting in a change of more than one Flood Zone (e.g. 1-3; 3-1).<br>Additional or fewer properties flooded internally.<br>Failure of utility service affecting a wide area.<br>Increase or decrease in groundwater qualitative or quantitative WFD status.<br>Pollution or loss of potable source of abstraction. |
| Moderate | Loss or alteration to one or more key elements/features of the baseline conditions such that post- development the character/composition/attributes of the baseline will be materially changed. | Change in risk resulting in a change of a single Flood Zone (e.g. 1-2, 2-3).<br>Existing internally flooded properties flooded to a greater or lesser depth. Additional or fewer properties flooded externally.<br>Change in performance of utility service affecting a wider area.<br>Increase or decrease in the yield or quality of an aquifer, but insufficient to change its WFD classification. |
| Minor | 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. | Change in risk but insufficient to change the Flood Zone.<br>Existing external flooding increased or decreased but no change in properties affected.<br>Localised change in performance of a utility service affecting the immediate area surrounding the Site.<br>Localised change in water quality immediately adjacent to the Site.<br>Reversible change in the yield or quality of an aquifer, but insufficient to change its WFD classification. |
| Negligible | Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation. | No/minimal change in flood risk.<br>No/minimal change in utility performance.<br>No/minimal change in water quality.<br>No significant impact on the economic value of the feature.<br>No change to the integrity of an aquifer. |

## Table 12.3: Significance of Potential Effect

| Magnitude | Sensitivity | | |
|---|---|---|---|
| | **High** | **Moderate** | **Low** |
| **Major** | Major Adverse/beneficial | Major – Moderate Adverse/beneficial | Moderate – Minor Adverse/beneficial |
| **Moderate** | Major – Moderate Adverse/beneficial | Moderate – Minor Adverse/beneficial | Minor Adverse/beneficial |
| **Minor** | Moderate – Minor Adverse/beneficial | Minor Adverse/Beneficial | Minor – Negligible Adverse/beneficial |
| **Negligible** | Negligible | Negligible | Negligible |

# 13. AIR QUALITY CHAPTER

## Introduction

13.1 Wardell Armstrong will be responsible for the preparation of the air quality ES chapter and Mariam Weatherley would be overall Project Manager of the air quality chapter taking on the role of lead author.

13.2 Mariam is a Chartered Environmental Scientist, with wide experience in the environmental profession predominantly in relation to air quality, gained from 14 years employment in this sector. Mariam's background in environmental consultancy has provided her with a good range of skills and knowledge through the involvement in air quality projects as part of EIAs for public and private sector clients where she frequently offers specialist air quality analysis, interpretation and advice relating to similar schemes across the UK such as large scale exemplar developments where bespoke assessments are essential to meet client needs.

## Description of Potential Effects

13.3 During the construction phase of development, there is the potential for dust soiling and human health effects as a result of dust and fine particulate matter (PM10) emissions. These effects may be experienced at existing sensitive receptors as a result of demolition, earthworks and construction, and through the track-out of dirt and mud onto the public highway.

13.4 During the operational phase, there is the potential for air quality effects at existing sensitive receptors, including ecological receptors where relevant, as a result of emissions from development generated vehicles. In addition, effects may be experienced at proposed sensitive receptors (i.e. proposed residential dwellings) as a result of their location close to existing sources of pollution.

13.5 Given the scale of the study area, there is the potential for development generated traffic to impact upon air quality, particularly at the southern edge of the site on either side of the M1 motorway and along the A628 Dodworth Road, located to the southeast of the site.

## Summary of Baseline Work Completed to Date

13.6 A review of local air quality has been conducted to inform the scope of the assessment and future discussions with Transport Consultants and the Environmental Health Officers at Barnsley Metropolitan Borough Council (BMBC). This has incorporated reviewing the location of local Air Quality Management Areas (AQMAs) and local air quality monitoring data, as well as surrounding land uses which may affect air quality on-site for future residents of the development.

13.7 The proposed development lies within the administrative area of Barnsley Metropolitan Borough Council (BMBC). There is an AQMA (AQMA No.1) declared for annual mean nitrogen dioxide ($NO_2$) by BMBC which covers the southern edge of the site on either side of the M1 motorway. Another AQMA (AQMA No. 2A), declared for annual mean $NO_2$ is located approximately 320m southeast of the site along the A628 Dodworth Road.

13.8 The site is, therefore, located partially within an existing AQMA. In addition, the M1 motorway is located adjacent to the site and close to the A628 AQMA and will be a key concern in the assessment of air quality.

## Overview of Approach and Methodology for Production of ES Chapter

13.9 Subject to discussion and agreement with the Environmental Health Officer (EHO) at BMBC, the following scope of works for the air quality assessment is proposed:

13.10 The air quality assessment will include consideration of both the construction and operational phases of development and will be undertaken in line with BMBC Air Quality and Emissions Good Practice Planning Guidance, October 2018.

13.11 ***Construction*** - The construction phase assessment will be undertaken in accordance with the IAQM document 'Guidance on the Assessment of Dust from Demolition and Construction' (February 2014). This will consider the potential dust soiling and human health impacts associated with demolition, earthworks, construction and the trackout of dirt and mud onto the public highway (where applicable).

13.12 ***Operation*** - The operational phase assessment will be undertaken using the ADMS-Roads air dispersion model and will focus on concentrations of $NO_2$ and fine particulates ($PM_{10}$ and $PM_{2.5}$), as these are the pollutants that are most likely to exceed the air quality objectives.

13.13 The impact of development-generated traffic will be considered at relevant existing sensitive receptor locations. The assessment will also consider pollutant concentrations within the site itself. The dominant source of emissions requiring assessment will comprise road traffic (i.e. the M1, A628 and A635 and, to a lesser extent, the remainder of the local road network).

13.14 The impacts will be assessed against criteria within the Environmental Protection UK (EPUK) and IAQM's 'Land-Use Planning and Development Control: Planning for Air Quality' (January 2017). All predicted pollutant concentrations will be compared against the relevant annual mean air quality objectives, as detailed in the 2010 AQS Regulations.

13.15 Meteorological data will be obtained from the most representative recording station, for input into the air dispersion model. Background pollutant concentrations will be obtained from an existing background monitoring location, or the DEFRA default concentration maps, as appropriate. Model verification will be undertaken using available monitoring data from BMBC.

13.16 Liaison with Fore Consulting Ltd will be undertaken in order to obtain 24-hour Annual Average Daily Traffic (AADT) flow data, with HGV percentages and average speeds for the base year, opening year (both without and with development impact) and a future year (both without and with development impact) for those routes affected by the Proposed Development.

13.17 The cumulative impacts of relevant developments will be assessed, with traffic data taking into account committed developments. Other proposed developments/activities which may have a cumulative effect upon local air quality will be considered following consultation with the relevant EHO.

13.18 In accordance with the current position of the IAQM, a sensitivity analysis will be undertaken as part of the modelled air quality assessment to account for uncertainties in future pollutant background concentrations and vehicle emission factors.

13.19 The results of the above will be detailed within the Air Quality Chapter of the ES.

**Significance Criteria to be used**

13.20 Institute of Air Quality Management (IAQM)[8] guidance details criteria for assessing the sensitivity of an area to dust soiling and human health effects of $PM_{10}$ and goes on to provide significance criteria to classify dust soiling and human health effects; this will be used to assess construction dust impacts as part of the assessment.

13.21 The operational phase impact will be assessed in accordance with the guidance from Environmental Protection UK (EPUK) and the IAQM[9]. The impact of a development will be assessed at specific receptors and takes into account both the long term background concentrations, in relation to the relevant Air Quality Assessment Level (AQAL) at these receptors, and the change with the development in place. Once the impact of the Proposed Development has been assessed for the individual impacts, the overall significance will be determined using professional judgement in accordance with the EPUK/IAQM guidance.

[8] Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction, February 2014
[9] Environmental Protection UK and Institute of Air Quality Management, Land-Use Planning and Development Control: Planning for Air Quality, January 2017

# 14. NOISE CHAPTER

## Introduction

14.1 The noise assessment will be prepared by Environmental Noise Solutions Limited ('ENS'). It will assess the potential effects of noise, associated with the Proposal, to the surrounding area. The potential effect of extant noise affecting the proposed development will also be assessed.

14.2 Given the distances between the proposed development and neighbouring residential receptors (and between sources of vibration and the proposed residential development) it is considered that the effects of vibration would be scoped out of the assessment.

14.3 The author of the ES chapter will be a Senior Acoustic Consultant and corporate member of the Institute of Acoustics (IOA) with over 14 years' experience in the acoustics and noise and assessment consultancy industry. The author has extensive experience in surveying, modelling and assessing environmental noise impacts for numerous UK and international projects in sectors such as residential planning, manufacturing, mining, waste, transportation and renewable energy.

## Description of Potential Effects

14.4 The proposed development has the potential to affect existing noise sensitive properties due to:

- Construction work on site;
- Increases in local road traffic noise due to the proposed new link road and increased traffic flows on local roads;
- Community Facilities (including Commercial / retail use) in the northern part of the development and commercial / industrial use at the employment area in the southern part of the development

14.5 In terms of site suitability for proposed noise sensitive uses (such as residential and school), the key considerations are:

- Environmental noise affecting proposed development (e.g. external amenity and internal noise levels);
- The potential noise impact (upon proposed dwellings) of Community Facilities (including commercial / retail use) in the northern part of the development and commercial / industrial use at the employment area in the southern part of the development

**Summary of Baseline Work Completed to Date**

14.6 A baseline noise survey was carried out between Monday 7th October 2019 and Wednesday 9th October 2019 to quantify the level of external noise affecting the site and local vicinity.

14.7 All baseline noise measurements were carried out by a survey engineer competent in environmental noise measurement. All measurements were taken in accordance with British Standard 7445-1:2003 'Description and Measurement of Environmental Noise – Guide to Quantities and Procedures'.

14.8 Following the baseline noise survey, the findings of the stand-alone noise assessment were presented in ENS report ref: NIA-8576-19-8758-v1 Barnsley West.

**Overview of Approach and Methodology for Production of ES Chapter**

14.9 The effects of noise during the construction phase will be assessed qualitatively in accordance with the British Standard 5228-1:2009+A1:2014 'Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise'.

14.10 Short term impacts, due to changes in noise levels arising from the implementation of Phase 1, will be determined for Year 2026. With regard to the long term impacts, the change in noise levels resulting from additional traffic flows associated with the proposed development has already been evaluated as part of a separate planning application for two roundabouts proposed at the northern and south-western boundaries of the site. The noise assessment performed for the proposed roundabouts [as detailed in ENS report ref: 'NIA-8648-19-8773-v4 Barnsley West Roundabouts (with maps)'] was required to consider the noise impact to existing receptors from the proposed link road, along with the additional traffic flows on the surrounding existing road network, for the Year 2033. The ES chapter will replicate the findings of the aforementioned study for 2033 with additional consideration to the impact of the proposed link road upon proposed dwellings immediately adjacent to the road.

14.11 Site suitability for residential development will be assessed in accordance with the NPPF and appropriate technical noise guidelines (e.g. BS8233 and ProPG guidance).

14.12 The impact of the ambient noise climate on the proposed school will be assessed in accordance with the requirements of 'Building Bulletin 93: Acoustic design of schools – A design guide'.

14.13 Potentially adverse impacts to noise sensitive receptors (existing or proposed) should be avoided from the introduction of additional noise sources associated with the employment development and neighbourhood commercial facilities. The assessment will utilise appropriate guidance (e.g. BS4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound') to recommend appropriate noise limits for new noise sources with reference to the prevailing background noise environment, as determined by the baseline noise study.

14.14 The assessment of noise associated with the proposed Mixed-Use Games Area (MUGA) will also be considered with reference to the NPPF and appropriate technical guidelines.

**Significance Criteria to be used**

14.15 The significance of effects is dependent on the impact magnitude and the sensitivity of receptors. The sensitivity criteria for construction phase and the operational phase of the proposed development are considered to be the same and are presented in the table below.

**Table 14.1 Receptor Sensitivity Descriptors**

| Value (Sensitivity) | Descriptor | Descriptor |
|---|---|---|
| High | Receptors where people or operations are particularly susceptible to noise | Residential, schools, hotels and hospitals |
| Medium | Receptors of moderate to low sensitivity to noise, where it may cause some distraction or disturbance | Offices and restaurants |
| Low | Receptors where distraction or disturbance from noise and/or vibration is minimal | Buildings not occupied, factories and working environments with existing levels of noise |

14.16 Drawing upon the defined impact magnitude (as determined using guidance outlined in the previous section) along with the receptor sensitivity (as defined above), the significance of effects will be determined with reference to the significance matrix presented below.

**Impact Significance Matrix**

| Sensitivity/Value of Receptor | Magnitude of Impact | | | |
|---|---|---|---|---|
| | High | Medium | Low | Negligible |
| High | Major | Moderate | Minor | Negligible |
| Medium | Moderate | Minor | Negligible | Negligible |
| Low | Minor | Negligible | Negligible | Negligible |

# PART THREE – TOPICS TO BE 'SCOPED OUT'

## 15. TOPICS TO BE 'SCOPED-OUT' AND NOT INCLUDED WITHIN THE ENVIRONMENTAL STATEMENT

Introduction

15.1 This section of the Scoping Report sets out those environmental topics where it is considered that there would be no potential for significant effects to occur and where it is proposed that a Chapter will not be included within the Environmental Statement (ES).

15.2 It is important to note that not all environmental effects constitute a 'significant' effect, as defined by the EIA Regulations. The extent of the ES should be restricted to only those topics which are likely to result in such a significant effect.

15.3 For all other environmental topics listed in Schedule 4 of the EIA Regulations, whilst it is acknowledged that some effects may occur, it is not considered that significant effects would arise. These include matters relating to human health and climate change.

# APPENDICES