

ENVIRONMENTAL STATEMENT VOLUME 2: WRITTEN STATEMENT

Land to the North and South of
Dearne Valley Parkway
Gateway 36 Phases 2 & 3

Harworth Group

Job No: 191DH600

January 2020



**CUSHMAN &
WAKEFIELD**

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Abbreviations

A	
AM	Ante meridiem (before noon)
AADT	Annual Average Daily Traffic
ADMS	Atmospheric Dispersion Modelling Software
AQA	Air Quality Assessment
AQAL	Air Quality Assessment Level
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objective
ASR	Air Quality Annual Status Report
ASSI	Areas of Special Scientific Interest
AW	Areas of Ancient Woodland
As	Arsenic
AES	Applied Ecological Services
AOD	Above Ordnance Datum
B	
BMBC	Barnsley Metropolitan Borough Council
BTO	British Trust for Ornithology
BAP	Biodiversity Action Plan
BCT	Bat Conservation Trust
C	
CBC	Common Bird Census
Cd	Cadmium
CDM	Construction Design Management Regulations
C&W	Cushman & Wakefield
CEMP	Construction Environment Management Plan
CLRTAP	Convention on Long-range Transboundary Air Pollution
CO	Carbon Monoxide
C6H6	Benzene
CIEEM	Chartered Institute for Ecology and Environmental Management
CCTV	Closed Circuit Television
D	
DMRB	Design Manual for Roads and Bridges
DEFRA	Department for Environment, Food and Rural Affairs
E	
EC	European Commission
ECCD	European Communities Council Directive
EcIA	Ecological Impact Assessment
EU	European Union
EIA	Environmental Impact Assessment
EPUK	Environmental Protection UK
ES	Environmental Statement
EPAQS	Expert Panel on Air Quality Standards
F	
FPCR	Ecology Consultant
FCS	Favourable Conservation Status
G	
GI	Green Infrastructure

GCN	Great Crested Newts
GPP	Guidance for Pollution Prevention
GLVIA3	Guidelines for Landscape and Visual Impact Assessment 3 rd Edition
H	
HSI	Habitat Suitability Index
HGV	Heavy Goods Vehicle
HRA	Habitat Regulations Assessment
HEGS	Hedgerow Evaluation and Grading System
Hg	Mercury
I	
IAQM	Institute of Air Quality Management
IEMA	Institute of Environmental Management and Assessment
IEF	Important Ecological Features
ILE	Institute of Lighting Engineers
J	
JNCC	Joint Nature Conservation Committee
L	
LA	Local Authority
LPA	Local Planning Authority
LCA	Landscape Character Assessment
LAQM	Local Air Quality Management
LBAP	Local Biodiversity Action Plan
LEMP	Landscape and Ecological Management Plan
LNR	Local Nature Reserves
LWS	Local Wildlife Sites
LVIA	Landscape Visual Impact Assessment
M	
M1	M1 Motorway
MAGIC	Multi-Agency Geographic Information for the Countryside
MHCLG	Ministry for Housing, Communities and Local Government
N	4
NA	Natural England
NNR	National Nature Reserves
NCA	National Character Area
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NIA	Nature Improvement Areas
NERC	Natural Resources and Environment Act
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
Ni	Nickel
NH ₃	Ammonia
O	
O ₃	Ozone
ODPM	Office of the Deputy Prime Minister (now replaced by Ministry of Housing Communities and Local Government).
P	
PM	Post meridiem (after noon)
PM	Particulate Matter

Pb	Lead
PIA	Personal Injury Accident (data)
PPG	Planning Policy Guidance
PPS	Planning Policy Statements
PAHs	Polycyclic Aromatic Hydrocarbons
PRoW	Public Right of Way
R	
RFC	Ratio of Flow Capacity
RDB	Red Data Book (in relation to ecology)
S	
SAC	Special Areas of Conservation
SPA	Special Protection Areas
SPI	Species of Principal Importance
SSSI	Sites of Special Scientific Interest
SYBG	South Yorkshire Bat Group
SO ₂	Sulphur Dioxide
SuDS	Sustainable Drainage System
T	
TA	Transport Assessment
TEMPro	Trip End Model Presentation Program
U	
UKCP	UK Climate Projections
W	
WHO	World Health Organisation
WYG	Noise Consultant
Z	
ZTV	Zone of Theoretical Visibility

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Version	Prepared by	Approved by	Date
Environmental Statement Vol 1	Katharine Morgan BA (Hons) DipTP MRTPI	Katrina Hulse BA(Hons) MA, PGDipLaw MRTPI	January 2020

1. Introduction

- 1.1 This Environmental Statement (ES) has been prepared to support a hybrid planning application for up to 1.1 million square feet (102,193sqm) of employment uses, at land to the north and south of Dearne Valley Parkway, Barnsley. The development will be a hybrid planning application with detailed planning permission sought for earthworks and access and outline planning permission sought for the employment development, internal access routes and landscaping and drainage. A full scheme description is provided at Chapter 2 of this ES. The application site comprises some 37.76 hectares of land (Barnsley Local Plan sites ES15 and ES17), illustrated on the site location plan (ref: 12006-1-100) at Appendix 1 and Figure 2.1 p6).
- 1.2 The hybrid planning application includes an illustrative masterplan, constraints plan, parameters plan, a Design and Access Statement and supporting technical reports. This documentation is referenced throughout the ES and appended (where necessary). The scheme to be assessed through this EA is identified by the Illustrative Masterplan (ref: 12006-1-110B – Appendix 2). The ES will also consider the cumulative impact of the Hoyland North Masterplan area (identified at Figure 2.2, p7).

Requirement for EIA

- 1.3 The legislative framework for EIA is set by European Directive 2011/92/EU, as amended by Directive 2014/52/EU (collectively referred to as the EIA Directive). The EIA Directive requires EIA to be prepared for planning permission for certain types of project. For projects in England the European legislative requirements are provided in the Town and Country Planning (Environmental Impact Assessment) Regulations 2017.
- 1.4 The proposed development is within Schedule 2, 10 (a) Industrial Estate Type Projects of the 2017 EIA Regulations. The site is not located within a sensitive area as defined in the 2017 EIA Regulations, however it is above the thresholds identified within Schedule 2, 10(a)¹. Accordingly, a screening letter was prepared to identify if there were likely to be any significant environmental effects. As part of this process, Barnsley Metropolitan Borough Council (BMBC) identified a need to include the Hoyland North Masterplan sites (identified at Figure 2.2 p7) as part of the screening process. A screening letter was duly prepared and submitted to BMBC on 29th October 2019 (Appendix 3). As part of the screening process it transpired that the development, when combined with the Hoyland North Masterplan sites, would constitute EIA development and would therefore require an ES. The Council has concurred with this view in their Screening Opinion (Appendix 4).
- 1.5 A Scoping Report was submitted to BMBC on 19th November 2019 (Appendix 5) and a Scoping Opinion was duly provided on 17th January 2020 (Appendix 6). The Scoping Opinion confirms the matters to be considered as part of the ES.

ES Structure

- 1.6 The ES includes the information as required under Schedule 4 Part 2 of the Regulations, with the ES prepared by an experienced consultancy team.
- 1.7 This ES presents the findings of the EIA. It follows current government guidance and includes the following sections:

¹ (i) The development exceeds 0.5 hectares.

- Volume 1 - Non Technical Summary
- Volume 2 - Written Statement
- Volume 3 - Appendices

1.8 The remainder of this ES is arranged as follows:

- Section 2 - Project Description;
- Section 3 - Need and Alternatives Considered;
- Section 4 - Environmental Assessment Methodology;
- Section 5 - Air Quality;
- Section 6 - Traffic Movements;
- Section 7 - Ecology and Associated Loss of Habitat;
- Section 8 - Landscape and Visual Impact Assessment, and;
- Section 9 - Conclusions.

1.9 The above provides a list of the main aspects of the development likely to have a significant impact on the Environment. These matters have been agreed with BMBC and confirmed in the Scoping Opinion (Appendix 6). Each chapter of the document conforms to a consistent approach within the document (explained in detail in Chapter 4).

2. Project Description

Background (surrounding area)

- 2.1 The application site is situated within the Hoyland area of Barnsley adjacent to Junction 36 of the M1 and the Dearne Valley Parkway. Hoyland has a mix of industrial and residential development. Much of the Hoyland area comprises sites allocated for development within the Barnsley Local Plan (adopted January 2019). The application sites are allocated for employment uses in the plan (sites ES15 and ES17 respectively – see figure 2.1 below). BMBC has identified three key development areas within Hoyland – Hoyland North, Hoyland South and Hoyland West. Each of these areas requires a Masterplan Framework to be approved before planning applications can be determined. The development site is partly within Hoyland North (site south of Dearne Valley Parkway ES17). The Hoyland North Masterplan Framework was adopted by BMBC in December 2019. It is understood that the Frameworks for Hoyland West and South are currently being prepared.

Site Location

- 2.2 The proposed application site includes land to the north and south of the Dearne Valley Parkway (Barnsley Local Plan sites ES15 and ES17) in Hoyland, Barnsley (See Site Location Plan at Appendix 1). The sites are close to Junction 36 of the M1 and the project is therefore known as Gateway 36. The project represents the second and third phase of Gateway 36 (The first phase of Gateway 36 is adjacent to site ES15 and has been completed).

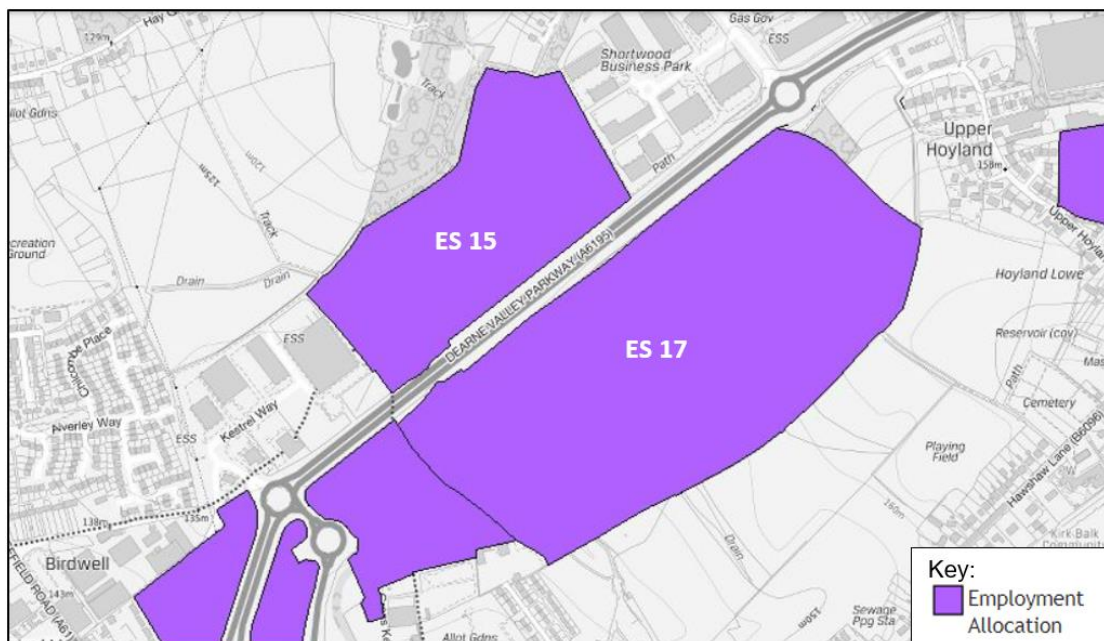


Figure 2.1 Extract of Barnsley Local Plan proposals map

The Site

- 2.3 The total area of the application sites is 37.76 hectares. Site ES15 slopes down from the Dearne Valley Parkway. Site ES17 slopes steeply upwards from the Dearne Valley Parkway.
- 2.4 Both sites will be accessed via the Dearne Valley Parkway, site ES15 from a new roundabout to be created as part of the development and ES17 from the existing Shortwood Roundabout. A full topographical survey has been undertaken for the sites which has been used to inform

the contour details for the proposed development. There are public rights of way traversing both sites which will be diverted and upgraded as part of the development proposals. Both sites are characterised by dense woodland.

Site History

- 2.5 The sites are part of a former colliery (now remediated) and are currently vacant. The sites are allocated for employment use within the Barnsley Local Plan², sites ES15 and ES17 (respectively).
- 2.6 Site ES17 is within the Hoyland North Masterplan area. Site ES15 is outside this area. The Hoyland North Masterplan Framework includes sites HS64, HS56, HS66 (allocated for residential development in the adopted Barnsley Local Plan) and ES14 (allocated for employment use in the adopted Barnsley Local Plan), see figure 2.2 below. The Hoyland North Masterplan Framework was adopted by Barnsley Council in December 2019. It has been agreed with BMBC that the ES prepared for this application will include a cumulative assessment of the Hoyland North Masterplan sites³.

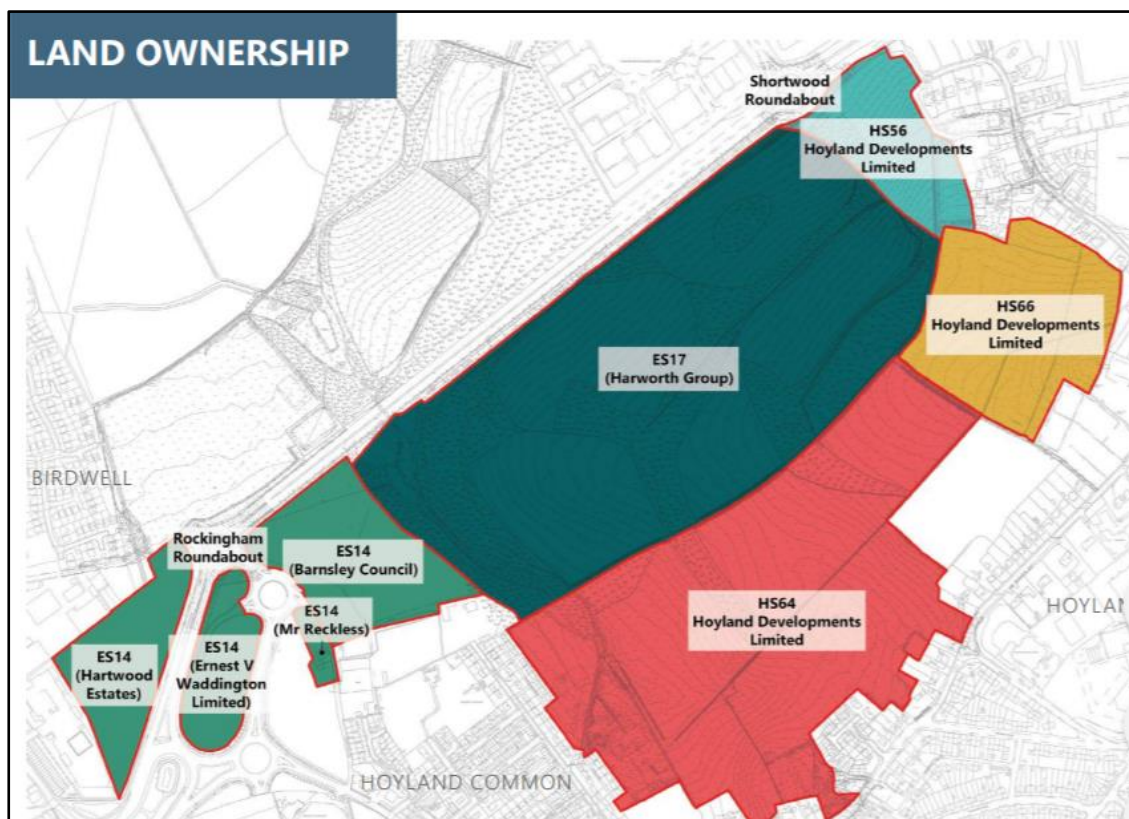


Figure 2.2 Hoyland North Masterplan Area and Land Ownership

Cumulative Assessment

- 2.7 The illustrative masterplan for sites ES15 and ES17 is provided at Appendix 2. At the current time the development including the cumulative Hoyland North Masterplan development, is as follows:

² Adopted January 2019

³ In accordance with Schedule 3 1(b) of the EIA Regulations 2017(p71).

Sites	Site area (hectares)	Proposed use
Application Sites		
ES15 (North of Dearne Valley Parkway)	9.72	Use classes B1, B2 and B8.
ES17 (South of Dearne Valley Parkway)	28.04	Use classes B1, B2 and B8.
Total	37.76	(total floorspace quantum up to 1.1million sqft)
Cumulative Sites		
ES14	8.71	Employment (use class B1, B2 and B8). A café (Starbucks) has been granted planning permission at part of this site ⁴ .
HS64	19.25	615 dwellings (of which, 100 units have outline planning permission ⁵).
HS56	6.39	80 dwellings
HS66	2.6	70 dwellings
Total Cumulative Sites	36.95	765 dwellings
Overall Total	79.35ha	

Table 2.1: Schedule of sites⁶.

Project Description

- 2.8 It is proposed to submit a hybrid planning application with detailed planning permission sought for earthworks and access and outline planning permission sought for the employment development, internal access routes and landscaping and drainage. In addition, this Environmental Statement (ES) will also consider the cumulative impacts of the Hoyland North Masterplan sites detailed at Table 2.1 (above).
- 2.9 The description of development (agreed with BMBC⁷) is as follows:

***‘Hybrid planning application for a development up to 102,193sqm of employment uses (use classes B1/B2 and B8) and associated works including provision of internal access roads, drainage and landscaping,
a) Outline with all matters reserved apart from means of access; and,
b) full application for associated earthworks and creation of access points including new roundabout to access Local Plan allocation site ES15.’***

Construction Stage and Management

- 2.10 The full application element of the proposals will be developed first. This will involve earthworks to create development platforms, the creation of access points (including a new roundabout on the Dearne Valley Parkway to serve site ES15).
- 2.11 The current programme would see the commencement of construction on the site from summer 2020, allowing for essential earthworks and the access points. It is anticipated that work on the

⁴ Planning ref: 2018/0745

⁵ Planning ref: 2016/1531

⁶ The areas for the Hoyland North Masterplan sites in hectares are those identified in the respective Barnsley Local Plan policies

⁷ Email to Andrew Burton of BMBC dated 8th January 2020.

employment units could begin late 2021 (following the grant of reserved matters consent). The broad programme for development is outlined below:

Timescales	Milestone
December 2019	Hybrid Planning Application submitted to BMBC.
April 2020	16 week determination period.
April/May 2020	Committee/Planning Decision Issued.
April/May 2020	Tree Clearance (overseen by Ecologist).
May 2020	Section 278 Approval for Highway Works.
June 2020	Submission of first reserved matters application(s) for employment units.
June 2020	Appointment of Earthworks Contractor. Appointment of Highways Contractor.
July 2020	Work commences on roundabout works.
July 2020	Work commences on earthworks.
February 2021	Completion of Part b – detailed works.

Table 2.2: Indicative timescales for development

- 2.12 The above programme is based on the Harworth Group outline delivery programme (dated 5th November 2019) and may be adjusted depending on progress with the application, Section 106 Legal Agreement and market conditions.

Description of the Construction Process

- 2.13 The main elements of the construction process for part (b) of the hybrid planning application are as follows:

- Site investigation works (phase 2 – detailed site investigation);
- Tree and vegetation clearance;
- Site earthworks to create development platforms;
- Construction of access points, and;
- Construction of the roundabout.

- 2.14 The main elements for the construction process for part (a) of the hybrid planning application are as follows:

- Construction of units to create up to 102,193 sqm floorspace for business, industrial and storage use (use classes B1, B2 and B8);
- Construction of sustainable drainage system comprising attenuation pond(s) and associated pipes and swales;
- Construction of drainage pumping station, and;
- Creation of landscaped areas (including replacement planting and biodiversity offsetting).

- 2.15 The tender process for the appointment of the contractors for the road and earthworks will begin in February 2020. This will enable time to carefully select and fully brief the preferred contractors ahead of work beginning in June 2020.
- 2.16 It is anticipated that construction scheme will be registered as part of the considerate contractors scheme. Construction site impacts will be carefully monitored. A Construction Environment Management Plan (CEMP) and a Landscape and Ecological Management Plan (LEMP) have been prepared for the site. The LEMP is included at Appendix 11.
- 2.17 These management plans are likely to include the following requirements:
- Prepare a detailed construction programme.
 - Prepare site specific method statements and control documents.
 - Maintain uninterrupted access to nearby residential and commercial properties.
 - Details of access by heavy goods vehicles, and;
 - Details of loading or unloading of plant and materials.

Construction working hours

- 2.18 Site working hours will largely be confined to 7:30am-7pm weekdays and 8-1:30 on Saturdays. There will be no working on Sundays or bank holidays, notwithstanding the highway works to the highway – Dearne Valley Parkway, which will need to take place at less busy times – likely evenings or overnight.

Operational Stage and Development Parameters

- 2.19 The illustrative masterplan (Appendix 2) and parameters plans establish the structural elements of the outline proposals against which the ES has been prepared. A parameters plan has also been prepared (Appendix 7) which provides details of indicative building heights. Information of the components of the scheme is included in the illustrative masterplan (Appendix 2). A breakdown of the component elements of the scheme is included at Table 2.3, p15.
- 2.20 The development proposals represent the first phase of the Hoyland North development and will generate up to 2,500 jobs. The scheme will deliver employment space on sites allocated in the recently adopted Barnsley Local Plan. The recently adopted Hoyland Masterplan Framework will also guide development at the site.
- 2.21 The indicative employment units have been designed to be sensitive to the local context and have also been designed in respect of market demand. It is known that there is strong demand for employment development in this location, however, the rate of delivery will be informed by ongoing discussions with the commercial sector to inform the respective reserved matters applications.
- 2.22 The associated landscaping and infrastructure improvements will ensure that the development delivers a high quality, attractive scheme.

Unit	Floorspace (sqm)
Rockingham 2 – ES17	
Unit 1	2,415.5
Unit 2	2,415.5
Unit 3	2,787.1
Unit 4	4,645.2
Unit 5	5,574.2
Unit 6	7,432.3
Unit 7	23,225.6
Unit 8	2,322.6
Unit 9	12,077.4
Rockingham 3 - ES15	
Unit 1	2,322.6
Unit 2	23,225.8
Office detail 10% of upper levels	8,844.8
Overall Total	97,288.2

**Table 2.3: Indicative floorspace details – as identified on illustrative masterplan.
(All units are for employment use – use class B1/B2/B8)**

Resilience to Climate Change

- 2.23 This hybrid planning application is in outline with all matters reserved (apart from means of access). The detailed aspects of the proposals relate to earthworks and works to create the access points only. It is anticipated that subsequent reserved matters applications would demonstrate their resilience to climate change. These measures are likely to include sustainable drainage systems, sustainable transport measures (including Travel Plans), and sustainable construction practices.

Mitigation Measures

- 2.24 The collaborative approach towards developing the Masterplan has led to a number of mitigation measures which have been applied as part of the evolution of the development. In addition a Construction Environment Management Plan (CEMP) and a Landscape and Ecological Management Plan (LEMP) have been prepared for the site and include management and mitigation measures. Table 2.4 below includes a summary of the key mitigation measures for the key areas within the ES.

ES Topic Area	Known Issue	Proposed Mitigation Measures
Highways	Increased Traffic Movement	Travel Plan for application proposals and Hoyland North Masterplan to promote and facilitate sustainable travel
Air Quality	Cumulative Air Quality Impact.	Travel Plans to promote and facilitate sustainable travel and thereby reduce vehicle movements.
Air Quality	Dust from construction activity	Works to be undertaken in accordance with a Construction Environment Management Plan
Landscape and Visual Impact	Visual impact on public views for the application site and cumulatively	Landscape/planting scheme to include perimeter trees/hedges where appropriate.

	with the Hoyland North Masterplan sites.	
Landscape and Visual Impact	Impact on heritage assets for the application site and cumulatively with the Hoyland North Masterplan sites.	Appropriate archaeological recording commensurate with significance of on-site assets. Council has confirmed this is sufficient as part of the Scoping Process⁸. No significant impacts or mitigation required in relation to off-site heritage assets
Ecology	Loss of trees and hedgerows and some semi improved grassland areas for the application site and cumulatively with the Hoyland North Masterplan sites.	Perimeter tree belts to be retained where possible. Landscape/planting scheme to include new native scrub/trees/hedges and grassland. Retained tree protection measures.
Ecology	Loss of habitat and reduction in biodiversity for the application site and cumulatively with the Hoyland North Masterplan sites	No removal of trees, hedgerows or scrub during bird breeding season. Implementation of precautionary working methods associated with any other protected or notable fauna as necessary. Lighting scheme to avoid habitat areas where appropriate. Landscape/planting scheme to include habitat creation areas, including a range of semi-natural habitats. Green infrastructure/Biodiversity Management Plan for creation of retained and new semi-natural habitats and landscape planting on and off-site.

Table 2.4: Proposed Mitigation Measures.

⁸ Email from County Archaeologist (Andrew Lines) dated – 19th December 2019.

3. Need and Alternatives Considered

- 3.1 The 2017 EIA Regulations require an ES to provide:

‘A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.’⁹

Reasonable Alternatives

Location

- 3.2 The Harworth Group made representations in respect of the application sites and secured an allocation for both sites for employment development (use classes B1, B2 and B8) in the recently adopted Barnsley Local Plan. As part of the examination process BMBC conducted a Sustainability Appraisal and provided background evidence to support the draft allocations including an Employment Land Review. The Employment Land Review demonstrated the amount of employment land required in the Local Plan to enable Barnsley Council to deliver the levels of economic growth within the plan period. The application sites are instrumental to that growth. As stated, part of the planning application (site ES17) is within the Hoyland North Masterplan area. The proposals represent the first phase of the Hoyland North Masterplan development.
- 3.3 The recently adopted Barnsley Local Plan has identified a range of employment sites (both in the Hoyland area) and throughout Barnsley to meet employment needs through the plan period. Whilst there may be other unallocated sites with the potential for employment use in Barnsley, BMBC would be unable to consider these ahead of allocated sites (as BMBC is reliant on these to meet its targets for economic growth). Similarly, whilst there may be other sites currently in employment use which are vacant or available these sites are unlikely to be of a comparable size to the proposed scheme (which is 37.76 hectares in total) or in such a suitable location, close to the main highway network (i.e. Junction 36 of the M1 and the Dearne Valley Parkway) and close to other existing employment uses (i.e. Gateway 36 Phase 1). It is therefore considered that the proposed development is within a highly suitable location.

Development Design

- 3.4 The design of the development proposals has evolved through discussions with BMBC and through public consultation. The Harworth Group worked with BMBC and other landowners to prepare the Hoyland North Masterplan Framework. The development proposals for the application sites evolved in tandem with this process and were consulted upon as part of the formal consultation events held on 14th August 2019 and 29th August 2019. The consultation boards included indicative layout details for site ES17 together with suggested access arrangements to service both ES15 and ES17. Three development options were considered as part of the consultation (see Appendix 8 – Presentation boards). The public consultation process and boards also explained the evolution of the design in terms of scale and building heights. A parameters plan identifying the proposed building heights is included at Appendix 7.
- 3.5 In tandem with the Hoyland North Masterplan work Harworth Estates has worked closely with BMBC to design the illustrative masterplan for the site. A number of alternative options for

⁹ Schedule 4 (Part 2) of the 2017 EIA Regulations.

access were considered before it was agreed that a new roundabout would provide access to site ES15 with ES17 serviced by Shortwood Roundabout.

Size and Scale

- 3.6 The development proposals for the development are in outline with consent sought for access and all other matters reserved. Notwithstanding this, the size and scale of the illustrative blocks shown on the Masterplan has been carefully considered and designed in the context of the site constraints and also in respect of market requirements for employment floorspace in this region. Subsequent reserved matters applications will provide specific detail of the size and scale of the units, however, the Illustrative Masterplan demonstrates that a scheme of 102,193sqm of employment floorspace can be achieved at the site.

Reasons for Site Selection

- 3.7 The application sites have been selected as they are allocated for employment use in the adopted Barnsley Local Plan and therefore are an instrumental part of the Council's long term strategy for economic growth. The application sites are former colliery land (now remediated) and are close to major transport networks (Junction 36 of M1 and the Dearne Valley Parkway). The proposals also represent the first phase of the delivery of the Hoyland North Masterplan site.

Preferred Option

- 3.8 The preferred option shown on the illustrative Masterplan at Appendix 2 has culminated in a scheme which balances the need to protect and enhance key ecological features of the site (i.e. biodiversity net gain – see chapter 7), the need to protect and enhance views into and out of the site (see Chapter 8 Landscape and Visual Impact), the need to ensure that the proposals do not have a negative impact on air quality (Chapter 5), together with the need to provide a high quality employment development. As such, the final Illustrative Masterplan for the site has given adequate safeguards to reflect the policy requirements of Policies ES15 and ES17 and guidance in the Hoyland North Masterplan Framework.
- 3.9 Overall, the development of the Masterplan has been collaborative and thorough, presenting a strategy which offers the most sustainable outcomes and provides mitigation as part of the development proposals.

4. Environmental Assessment Methodology

- 4.1 The legislative framework for EIA is set by European Directive 2011/92/EU, as amended by Directive 2014/52/EU (collectively referred to as the EIA Directive). The EIA Directive requires EIA to be prepared for planning permission for certain types of project. For projects in England the European legislative requirements are provided in the Town and Country Planning (Environmental Impact Assessment) Regulations 2017.
- 4.2 The proposed development is within Schedule 2, 10 (a) Industrial Estate Type Projects of the 2017 EIA Regulations. The site is not located within a sensitive area as defined in the 2017 EIA Regulations, however it is above the thresholds identified within Schedule 2, 10(a)¹⁰. Accordingly, a screening letter was prepared to identify if there were likely to be any significant environmental effects. As part of this process, BMBC identified a need to include the Hoyland North Masterplan sites (identified in Table 2.1, page 8) as part of the screening process. A screening letter was duly prepared and submitted to BMBC on 29th October 2019. As part of the screening process it transpired that the development, when combined with the Hoyland North Masterplan sites, would constitute EIA development and would therefore require an ES. The Council has concurred with this view.

The Scope of the Environmental Assessment

- 4.3 A Scoping Report was submitted to BMBC on 19th November 2019 (Appendix 5). The purpose of the Scoping Report was to establish, through consultation those matters which the ES should cover and to identify the process in which the ES would assess and report the findings of those assessments. The Scoping Report also identifies those matters which have been scoped out of the ES.
- 4.4 BMBC consulted with statutory and non-statutory consultees and responded with a formal Scoping Opinion on 17th January 2020 (Appendix 6). The Scoping Opinion confirms the matters to be considered as part of the ES. BMBC consulted the following bodies on the Scoping Report:
- County Ecologist;
 - South Yorkshire Archaeology Service;
 - The Coal Authority;
 - South Yorkshire Mining Advisory Service;
 - BMBC Air Quality Pollution Control Officer;
 - BMBC Biodiversity Officer;
 - BMBC Pollution Control;
 - BMBC Highways Officer;
 - BMBC Public Rights of Way Officer;
 - BMBC Highways Drainage Officer;
 - BMBC Planning Policy Team;
 - BMBC Conservation Officer,

¹⁰ (i) The development exceeds 0.5 hectares.

- BMBC Legal Services, and;
 - BMBC Tree Officer.
- 4.5 BMBC's Scoping Opinion agreed with the Applicant's methodology and the the proposed key topic areas for the ES as detailed below:
- Air Quality;
 - Traffic Movements;
 - Ecology and Associated Loss of Habitat;
 - Landscape and Visual Impact.
- 4.6 The Scoping Opinion agreed that the following matters are scoped out of the ES. All of these matters are addressed as part of the planning application to which this ES relates.
- Geotechnical/Ground Conditions;
 - Flood Risk and Drainage;
 - Noise;
 - Materials (Soil and Waste);
 - Social/Economic;
 - Material Assets (Archaeology);
 - Planning Policy Context, and;
 - Climate Change.

Study Team

- 4.7 Cushman & Wakefield coordinated the ES submission, details of the authors of the key topic chapters are as follows:
- Chapters 1-4: Introduction, Site Description, Need and Alternatives, Methodology (Cushman & Wakefield);
 - Chapter 5: Air Quality (WYG)
 - Chapter 6: Traffic Management (Mosodi Ltd)
 - Chapter 7: Ecology and Associated Loss of Habitat (FPCR)
 - Chapter 8: Landscape and Visual Impact (Urban Wilderness).

Methodology

- 4.8 Each environmental topic forms a separate chapter of the ES. For each topic the following criteria are addressed:
- Legislation Policy and Guidance;
 - Methodology and assessment criteria;
 - Baseline conditions;
 - Identification of likely effects;

- Evaluation and assessment of the significance of identified effects (taking into account any mitigation measures proposed as part of the development);
- Cumulative Impacts, and;
- Identification of any further mitigation measures to avoid, reduce or remedy adverse effects (in addition to those measures which form part of the proposals).

Legislation Policy and Guidance

- 4.9 Each chapter of the ES refers to the relevant legal requirements and policies related to their topic area.

Methodology and Assessment Criteria

- 4.10 Each topic chapter will provide details of the methodology for baseline data collection and the assessment of effects. Each identified environmental topic is authored by a specialist in that area. The identification and evaluation of effects have taken into account topic specific guidance where available and applicable.

Baseline Conditions

- 4.11 The baseline conditions are existing and likely future environmental conditions in the absence of the project. Each topic based chapter will include a description of the existing (baseline) environmental conditions. Consideration will also be given to any likely changes between the time of survey and the future baseline for the construction and operation of the project. Where appropriate, this section will be supported by baseline technical reports (included in the ES appendices). The baseline conditions at the site (and within the wider cumulative area) form the basis of the assessment.
- 4.12 The consideration of future baseline conditions will also take into account the likely effects of climate change (in so far as these are known at the time of writing). This will be based on information available for the UK Climate Projections project (UKCP18)¹¹, which provides information on changes in climate for the UK.

Identification of likely effects

- 4.13 The 2017 EIA Regulations require the identification of the likely significant environmental effects of the project. Each subject chapter will consider the sensitivity of the receptors affected and the likely impact in determining the significance of the effect.
- 4.14 Receptors are defined as the resource or user that would be affected by the proposed development. The baseline studies for each topic will identify environmental receptors and evaluate their sensitivity to the proposed development.
- 4.15 Impacts are defined as physical changes to the environment directly attributable to the project. Each topic chapter will identify the likely environmental impacts and assess their magnitude¹². Impacts will be defined as either adverse or beneficial. Depending on the topic they may also be described as direct (i.e. activities associated with the project), or indirect (impacts on the

¹¹ UK Climate Projections is a climate analysis tool that forms part of the Met Office Hadley Centre Climate Programme.

¹² The assessment of magnitude impact is likely to include the extent of the impact, duration, frequency and reversibility.

environment which are not a direct result of the project). Impacts are divided into those occurring during the construction phase and those occurring during operation.

Significance of Effects

4.16 Effect is the term used to define the consequence of an impact, which is determined by correlating the magnitude of the impact to the sensitivity of the receptor or resource. The significance of the effect depends both on the impact magnitude and the sensitivity of the receptor.

4.17 Levels of significance to be used in the assessment are detailed below (in descending order):

- Major – very important considerations, material in the decision making process;
- Moderate – important decision making factors;
- Minor – local factors, unlikely to be critical in the decision making process, and;
- Negligible – no effect or the effect would be beneath the levels of perception.

4.18 These significance levels are defined for each topic within the methodology sections of each chapter.

Cumulative Effects

4.19 In accordance with BMBC's Screening Opinion, the cumulative effects of the proposed development in conjunction with the Hoyland North Masterplan sites (see table 2.1, page 8) are considered as part of each topic chapter.

Mitigation and Monitoring Measures

4.20 The 2017 EIA Regulations state that the ES should include, '*a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce or, if possible, offset likely significant adverse effects on the environment*¹³'.

4.21 The development of mitigation measures have been developed throughout the EIA process in response to the findings of initial assessments. The proposed development includes a number of mitigation measures (detailed at table 2.4, pages 11 and 12) designed to reduce or prevent significant adverse environmental effects (where practicable). In most cases the proposed measures are likely to result in the enhancement of environmental conditions.

4.22 The topic chapters therefore take into account all measures proposed as part of the proposed development.

- Primary Mitigation – measures included as part of the project design.
- Construction Mitigation – measures to be employed during the construction phase to minimise environmental impacts (e.g. Construction Environment Management Plan (CEMP)).
- Legislative Requirements – measures required as a result of legislative requirements.

¹³ Part 5, Section 18, Paragraph 3(b) of 2017 EIA Regulations

5. Air Quality

Policy Background

- 5.1 European air quality legislation is consolidated under Directive 2008/50/EC, which came into force on 11th June 2008. This Directive consolidates previous legislation which was designed to deal with specific pollutants in a consistent manner and provides new air quality objectives for fine particulates. The consolidated Directives include:
- Directive 1999/30/EC – the First Air Quality "Daughter" Directive – sets ambient air limit values for nitrogen dioxide (NO₂) and oxides of nitrogen (NO_x), sulphur dioxide (SO₂), lead (Pb) and particulate matter (PM);
 - Directive 2000/69/EC – the Second Air Quality "Daughter" Directive – sets ambient air limit values for benzene (C₆H₆) and carbon monoxide (CO); and,
 - Directive 2002/3/EC – the Third Air Quality "Daughter" Directive – seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone (O₃) in ambient air.
- 5.2 The fourth daughter Directive was not included within the consolidation and is described as:
- Directive 2004/107/EC – sets health-based limits on polycyclic aromatic hydrocarbons (PAHs), cadmium (Cd), arsenic (As), nickel (Ni) and mercury (Hg), for which there is a requirement to reduce exposure to as low as reasonably achievable.

UK Legislation

- 5.3 The Air Quality Standards Regulations (Amendments 2016) seek to simplify air quality regulation and provide a new transposition of the Air Quality Framework Directive, First, Second and Third Daughter Directives and also transpose the Fourth Daughter Directive within the United Kingdom (UK). The Air Quality Limit Values are transposed into the updated Regulations as Air Quality Standards, with attainment dates in line with the European Directives. SI 2010 No. 1001, Part 7 Regulation 31 extends powers, under Section 85(5) of the Environment Act (1995), for the Secretary of State to give directions to Local Authorities (LAs) for the implementation of these Directives.
- 5.4 The UK Air Quality Strategy is the method for implementation of the air quality limit values in England, Scotland, Wales and Northern Ireland and provides a framework for improving air quality and protecting human health from the impacts of air pollution.
- 5.5 For each nominated pollutant, the Air Quality Strategy sets clear, measurable, outdoor air quality standards and target dates by which these must be achieved; the combined standard and target date is referred to as the Air Quality Objective (AQO) for that pollutant. Adopted national standards are based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS) and have been translated into a set of Statutory Objectives within the Air Quality (England) Regulations (2000) SI 928, and subsequent amendments.
- 5.6 The AQOs for pollutants included within the Air Quality Strategy are presented in Table 5.1 p20 along with European Commission (EC) Directive Limits and World Health Organisation (WHO) Guidelines. The ecological levels are based on WHO and Convention on Long-range Transboundary Air Pollution (CLRTAP) guidance in Table 5.2 p20.

Pollutant	Applies	Objective	Concentration Measured as ¹⁰	Date to be achieved and maintained thereafter	European Obligations	Date to be achieved and maintained thereafter	New or existing
PM ₁₀	UK	50µg/m ³ (max 35 exceedances a year)	24-hour mean	1 st January 2005	50µg/m ³ by end of 2004 (max 35 exceedances a year)	1 st January 2005	Retain Existing
	UK	40µg/m ³ by end of 2004	Annual mean	1 st January 2005	40µg/m ³	1 st January 2005	
PM _{2.5}	UK	25µg/m ³	Annual Mean	31 st December 2010	25µg/m ³	1 st January 2010	Retain Existing
Nitrogen Dioxide (NO ₂)	UK	200µg/m ³ not to be exceeded more than 18 times a year	1 Hour Mean	31 st December 2005	200µg/m ³ not to be exceeded more than 18 times a year	1 st January 2010	Retain Existing
	UK	40µg/m ³	Annual Mean	31 st December 2005	40µg/m ³	1 st January 2010	

Table 5.1 Air Quality Standards, Objectives, Limit and Target Values

Pollutant	Applies	Objective	Concentration Measured as
NO _x	UK	30µg/m ³	Annual Mean

Table 5.2 Ecological Air Quality Standards, Objectives, Limit and Target Values

National Planning Policy Framework

- 5.7 The National Planning Policy Framework (NPPF), revised in February 2019, principally brings together and summarises the suite of Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) which previously guided planning policymaking. The NPPF broadly retains the principles of PPS:23: Planning and Pollution Control and states that:

‘Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas or Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic or travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan’.

National Planning Practice Guidance (NPPG)

- 5.8 National Planning Practice Guidance (NPPG) web-based resource was updated by the Ministry for Housing, Communities and Local Government (MHCLG) on 1st November 2019 to support the National Planning Policy Framework and make it more accessible. A review of PPG: Air Quality identified the following guidance:

“The 2008 Ambient Air Quality Directive sets legally binding limits for concentrations in outdoor air of major air pollutants that affect public health such as particulate matter (PM₁₀ and PM_{2.5}) and nitrogen dioxide (NO₂).

The UK also has national emission reduction commitments for overall UK emissions of 5 damaging air pollutants:

- fine particulate matter (PM2.5)
- ammonia (NH3)
- nitrogen oxides (NOx)
- sulphur dioxide (SO2)
- non-methane volatile organic compounds (NMVOCs)

As well as having direct effects on public health, habitats and biodiversity, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems. Odour and dust can also be a planning concern, for example, because of the effect on local amenity.”

- 5.9 This is applicable to the proposed development. The following chapter provides the evidence and results of the air quality impacts assessment of the proposed development.

Local Policy

- 5.10 The Barnsley Local Plan (adopted in January 2019) sets out and provides guidance for managing development and land use within the borough. Following a review of the BMBC Local Plan, the following policies have been identified:

- 5.11 “Policy T5 Reducing the Impact of Road Travel

We will reduce the impact of road travel by:

- *Developing and implementing robust, evidence based air quality action plans to improve air quality;*
- *Working with our sub regional partners, fleet and freight operators to improve the efficiency of vehicles and goods delivery, and reduce exhaust emissions; and*
- *Implementing measures to ensure the current road system is used efficiently.”*

- 5.12 “Policy CL1 Contaminated and Unstable Land

Where the future users or occupiers of a development would be affected by contamination or stability issues, or where contamination may present a risk to the water environment, proposals must be accompanied by a report which:

- *shows that investigations have been carried out to work out the nature and extent of contamination or stability issues and the possible effect it may have on the development and its future users, the natural and historic environment; and*
- *sets out detailed measures to allow the development to go ahead safely, including, as appropriate:*
- *removing the contamination;*

- *treating the contamination;*
- *protecting or separating the development from the effects of the contamination; and*
- *addressing land stability issues resulting from former coal mining activities.*

Where measures are needed to allow the development to go ahead safely, these will be required as a condition of any planning permission.”

5.13 *“Policy Poll1 Pollution Control and Protection*

Development will be expected to demonstrate that it is not likely to result, directly or indirectly, in an increase in air, surface water and groundwater, noise, smell, dust, vibration, light or other pollution which would unacceptably affect or cause a nuisance to the natural and built environment or to people.

We will not allow development of new housing or other environmentally sensitive development where existing air pollution, noise, smell, dust, vibration, light or other pollution levels are unacceptable and there is no reasonable prospect that these can be mitigated against.

Developers will be expected to minimise the effects of any possible pollution and provide mitigation measures where appropriate.”

5.14 *“Policy AQ1 Development in Air Quality Management Areas*

Development which impacts on areas sensitive to air pollution(13) in air quality management areas will be expected to demonstrate that it will not have a harmful effect on the health or living conditions of any future users of the development in terms of air quality (including residents, employees, visitors and customers), taking into account any suitable and proportionate mitigation required for the development.

We will only allow residential development which impacts on areas sensitive to air pollution, where the developer provides an assessment that shows living conditions will be acceptable for future residents, subject to any required mitigation.

We will only allow development which impacts on areas sensitive to air pollution which could cause more air pollution, where the developer provides an assessment that shows there will not be a significantly harmful effect on air quality, subject to any required mitigation.

Furthermore, development which impacts on areas sensitive to air pollution due to traffic emissions will be expected to demonstrate suitable and proportionate mitigation relative to the increased traffic emissions generated by the development.”

- 5.15 The BMBC Air Quality and Emissions Good Practice Planning Guidance (October 2018) sets out and provides guidance for managing development and land use within the borough with regards to air quality.

IAQM Land Use Planning & Development Control: Planning for Air Quality

- 5.16 The assessment of the potential air quality impacts that are associated with the operational phase has focused on the predicted impact of changes in ambient nitrogen dioxide (NO₂) and particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀) and less than 2.5µm (PM_{2.5}) as a result of the development at key local receptor locations. The changes have been referenced to EU air quality limits and UK air quality objectives and the magnitude and impact

description of the changes have been referenced to non-statutory guidance issued by the IAQM and Environmental Protection UK (EPUK).

Local Authority Pollution Control

- 5.17 Local Authorities, including BMBC have formal powers to control air quality through a combination of Environmental Permitting, Local Air Quality Management (LAQM) and by use of their wider planning policies.
- 5.18 The following subsections provide details of BMBC's air quality obligations applicable to this assessment.

Local Air Quality Management

- 5.19 Under Section 82 of the Environment Act (1995) (Part IV) LAs are required to periodically review and assess air quality within their area of jurisdiction under the system of LAQM. This Review and Assessment of air quality involves assessing present and likely future air quality against AQO levels. If it is predicted that levels at the façade of buildings where members of the public are regularly present (normally residential properties) are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA the LA is required to produce an Air Quality Action Plan (AQAP), the objective of which is to reduce pollutant concentrations in pursuit of the AQOs. The results of BMBC's Review and Assessment of air quality in the Council's area of jurisdiction are reviewed within this Air Quality chapter.

Methodology and Assessment Criteria

Scoping Assessment Stage

- 5.20 WYG scoped the Air Quality Assessment with BMBC as part of the Scoping Report (dated 19th November 2019). The Air Quality Officer confirmed that he was satisfied with the scope of the Air Quality chapter (email dated 2nd December 2019).

Assessment Methodology

Construction Phase

- 5.21 The construction phase assessment uses the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction' document (February 2014) and section 3.45 of the Volume 11 Section 3 of the Design Manual for Roads and Bridges. In total four processes are considered, namely demolition, earthworks, construction and trackout. For each of these phases, the significance of the potential significant dust impacts is derived following the determination of a dust emission class and the distance of activities to the nearest sensitive receptor, therefore assessing worst case likely significant impacts.
- 5.22 As construction traffic is predicted to be lower than operational traffic it is considered that the assessment of traffic during the operational phase is sufficient for assessing construction traffic.

Operational Phase

- 5.23 The operational phase assessment consists of the quantified predictions of the change in NO₂, PM₁₀ and PM_{2.5} of the development due to changes in traffic movement. Predictions of air quality at the proposed development site have been undertaken for the operational phase of the development using Atmospheric Dispersion Modelling Software (ADMS) 4.1.1. ADMS

software is used to model NO₂, PM₁₀ and PM_{2.5} emitted from traffic emissions, which predicts the changes in levels of both pollutants experienced due to the changes in traffic levels and distribution in traffic as a result of the proposed development.

5.24 The significance of the effects during the operational phase of the development is based on the latest guidance produced by EPUK and IAQM in January 2017 'Land-Use Planning & Development Control: Planning for Air Quality' and June 2019 'A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites'. The guidance lays a basis for a consistent approach that could be used by all parties associated with the planning process to professionally judge the overall significance of the air quality effects based on severity of air quality impacts.

5.25 As part of the Operational Phase, a 'damage cost' assessment using the BMBC 'Air Quality and Emissions Good Practice Planning Guidance' (October 2018) has been assessed.

Sensitivity of Receptors

5.26 Receptors can demonstrate different sensitivities to changes in their environment. For the purpose of this assessment sensitivity is determined as Very High, High, Medium, Low and Negligible as detailed in Table 5.3 below.

Sensitivity	Criteria
Very High	- Do Minimum pollutant concentration at ≥ 110 of the AQAL (Emissions). - Receptors of very high sensitivity to dust and odour, such as: hospitals and clinics, retirement homes, painting and furnishing, hi-tech industries and food processing (Construction). - Densely populated areas – more than 100 dwellings within 20m of the development site (Construction).
High	- Do Minimum pollutant concentration already 103-109 of the AQAL (Emissions). - Receptors of high sensitivity to dust and odour, such as: schools, residential areas, food retailers, glasshouses and nurseries, horticultural land and offices (Construction). - Densely populated areas – 10-100 dwellings within 20m of the development site (Construction).
Medium	- Do Minimum pollutant concentration between 95 - 102% of the relevant AQO (Emissions). - Receptors of medium sensitivity to dust and odour, such as: farms, outdoor storage, light and heavy industry (Construction). - Suburban or edge of town areas (Construction).
Low	- Do Minimum pollutant concentration between 75-90% of the relevant AQO (Emissions) - All other dust/odour sensitive receptors not identified above (Construction). - Rural/Industrial areas (Construction).
Negligible	- Concentration less than 75% of the relevant AQO (Emissions) - Receptor more than 350m away (construction)

Table 5.3 Methodology for Assessing Sensitivity of Receptor

Magnitude of Impact

5.27 Table 5.4 provides the criteria used for the classification of the magnitude of likely significant air quality impacts.

Magnitude ⁽¹⁾	Description	Examples
Large	Impact resulting in a considerable change in baseline environmental conditions with severe undesirable/desirable consequences on the receiving environment.	- Air quality varies between the do minimum and do something by more than 10% of the air quality criterion (Emissions). - Substantial risk that emissions will generate statutory nuisance complaints, resulting in formal action (Construction).
Medium	Impact resulting in a discernible change in baseline environmental conditions with undesirable/desirable conditions	- Air quality varies between the do minimum and do something by 5 - 10% of the air quality criterion (Emissions). - Moderate risk that emissions will generate statutory nuisance complaints, resulting in formal action (Construction).

Magnitude ⁽¹⁾	Description	Examples
Small	Impact resulting in a discernible change in baseline environmental conditions with undesirable/desirable conditions that can be tolerated.	- Air quality varies between the do minimum and do something by 2 - 5% of the air quality criterion (Emissions). - Slight risk that emissions will generate statutory nuisance complaints, resulting in formal action (Construction).
Imperceptible ⁽²⁾	Very low discernible change in baseline environmental conditions.	- Air quality varies between the do minimum and do something by less than 1-2% of the air quality criterion (Emissions). - Little or no cause for nuisance complaints to be made (Construction).
Neutral	No change in baseline conditions	Air quality varies between the do minimum and do something by less than 0.5% of the air quality criterion (Emissions).

(1) An impact's magnitude can be either positive or negative, except for imperceptible.

(2) If the assessor is certain that a receptor or attribute of a feature will suffer no impact whatsoever then the term 'No Impact' can be used in the place of 'Imperceptible Impact'. However, it is not usually possible to determine 'No Impact' in many cases with 100% certainty so the term 'Imperceptible' should be used in these cases.

Table 5.4 Method for Assessing Magnitude of Likely Significant Impacts on Air Quality

5.28 It is recognised that likely significant air quality impacts can operate over a range of geographical areas and therefore a geographical scale may be taken into account in describing the scale/magnitude of the likely significant impact.

Significance of Effect

5.29 The level of significance of each likely effect is determined by combining the magnitude of change with the sensitivity of the receptor. Table 5.5 shows how the interaction of magnitude and sensitivity results in the significance of an environmental effect.

5.30 If the magnitude of change is Moderate to Substantial, then the change is considered to have a significant effect on the local air quality.

5.31 The table has been developed by WYG but the matrix combinations and terms used correlate with the significance matrix recommended by Development Control: Planning for Air Quality, 2017.

Sensitivity of Receptor	Magnitude of Impact				
	Large	Medium	Small	Imperceptible	Neutral
Very High	Substantial	Substantial	Substantial	Moderate	Negligible
High	Substantial	Substantial	Moderate	Moderate	Negligible
Medium	Substantial	Moderate	Moderate	Slight	Negligible
Low	Moderate	Moderate	Slight	Negligible	Negligible
Negligible	Moderate	Slight	Negligible	Negligible	Negligible

Table 5.5 Impact Significance Matrix

Limitations of the Assessment

Construction Phase

5.32 The Construction Phase assessment has been undertaken using Professional Judgement as per the IAQM Guidance. The guidance states:

“Because the diverse range of projects that are likely to be subject to dust impact assessments mean that it is not possible to be prescriptive as to how to assess the impacts. Also, a wide range of factors affects the amount of dust that may arise, and these are not readily quantified.”

5.33 The above guidance ensures that a full range of potential impacts are considered. Additionally, the impacts associated with the assessment are considered to be unimportant compared to the operational phase assessment.

Background Concentrations

- 5.34 2018 background concentrations have been used for the model verification and baseline results. Details of background concentrations used for the assessment are presented in page 23 of the Air Quality Assessment (AQA) (Appendix 9).
- 5.35 It should be noted that the background concentration used in the assessment will not affect the predicted marginal increase in pollutant concentrations as a result of the development which the assessment is based upon.

Defra Toolkits

- 5.36 The Defra Emissions Factor Toolkit (v9.0, May 2019) for road traffic emission factors was utilised to predict emission rates for the operational phase assessment.

Baseline Conditions

- 5.37 Baseline air quality in the vicinity of the proposed development site has been defined from a number of sources, as described in the following sections.

Air Quality Review and Assessment

- 5.38 BMBC has conducted an ongoing exercise to review and assess air quality within its area of jurisdiction. Following a review of the Defra Air Quality Management Area (AQMA) and Air Quality Annual Status Report (ASR) has shown that BMBC has declared six Air Quality Management Areas (AQMA)'s. These are described below:
- Barnsley AQMA No.1: An area along the M1 between Junction 35a and Junction 38, including Haigh, Darton, Cawthorne Dike, Higham, Dodworth, Gilroyd, Rockley, Birdwell, and Tankersley. The area extends 100m either side of the central reservation;
 - Barnsley AQMA No.2: An area encompassing the A628 from junction 37 of the M1 to Town End roundabout, including part of Summer Lane from Town End roundabout to Wharncliffe Street;
 - Barnsley AQMA No.4: An area encompassing the southbound carriageway of the A61 Harborough Hill Road from the PC World gyratory to the southbound slip road of the A61 near to its junction with Queens Road;
 - Barnsley AQMA No.5: An area encompassing the junction of Rotherham Road and Burton Road;
 - Barnsley AQMA No.6: Incorporating the A616 road through Langsett; and,
 - Barnsley AQMA No.7: Incorporating the southbound carriageway of the A61 Sheffield Road adjacent to the junction with the A6133 Cemetery Road.
- 5.39 The closest AQMA to the Proposed Development Site is Barnsley AQMA No. 1 which is located 0.7 km west-south-west of the site boundary. As part of the air quality assessment receptors within the AQMA are assessed to determine any effects in air quality as a result of the proposed development.

Air Quality Monitoring

- 5.40 The monitoring completed by BMBC has shown (see page 12 of the AQA – Appendix 9) all automatic monitoring stations monitored concentrations of below the AQO for NO₂ (40 µg/m³ annual mean) during 2017. Of the non-continuous (diffusion tube) monitoring location located within the assessment area (see page 12 of the AQA – Appendix 9), diffusion tubes DT24, DT25 and DT26 monitored exceedances of the NO₂ AQO (40µg/m³ annual mean) in 2017. With diffusion tubes DT27, DT28, DT29, DT30, DT31 and DT32 did not monitored exceedances of the NO₂ AQO (40µg/m³ annual mean) in 2017.
- 5.41 A full detailed review of the air quality monitoring is available at page 12 of the AQA – Appendix 9). The locations of the monitoring completed, is shown at Figure 5.1 p34).

Traffic Emission Sources

- 5.42 The desktop assessment has identified that traffic movements are likely to be the most significant local source of pollutants affecting the site and its surroundings. The principal traffic derived pollutant likely to impact local receptors is nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}).

Meteorology

- 5.43 Meteorological conditions have significant influence over air pollutant concentrations and dispersion. Pollutant levels can vary significantly from hour to hour as well as day to day, thus any air quality predictions need to be based on detailed meteorological data. The ADMS model calculates the dispersion of pollutants on an hourly basis using a year of local meteorological data. The 2017 meteorological data used in the assessment is derived from Emley Moor No.2 Meteorological Station. Reference should be made to p38 of the AQA (Appendix 9) for an illustration of the prevalent wind conditions at Emley Moor No.2 Meteorological Station site.

Sensitive Receptors for Air Quality Assessment

- 5.44 Receptors that are considered as part of the AQA are primarily those existing receptors that are situated along routes predicted to experience significant changes in traffic flow as a result of the Proposed Development. These have been identified in the following sections.

Ecological Sensitive Receptors

- 5.45 Air quality impacts associated with the proposed re-development have the potential to impact on receptors of ecological sensitivity within the vicinity of the site. The IAQM guidance on 'Air Quality Impacts on Designated Nature Conservation Sites' (2019) document outlines the types of designated nature sites within 2 km of the proposed development which require air quality assessment. These are inclusive of;
- Sites of Special Scientific Interest (SSSIs);
 - Special Areas of Conservation (SACs);
 - Special Protection Areas (SPAs);
 - Ramsar Sites;
 - Areas of Special Scientific Interest (ASSIs);

- National Nature Reserves (NNRs);
- Local Nature Reserves (LNRs);
- Local Wildlife Sites (LWSs); and,
- Areas of Ancient Woodland (AW).

5.46 The Conservation of Habitats and Species Regulations (2017) additionally requires competent authorities to review planning applications and consents that have the potential to impact on European designated sites (e.g. Special Protection Areas).

5.47 A study was undertaken to identify any statutory designated sites of ecological or nature conservation importance within the extents of the dispersion modelling assessment. This was completed using the Multi-Agency Geographic Information for the Countryside (MAGIC) web-based interactive mapping service, which draws together information on key environmental schemes and designations.

5.48 Following a search within a 2 km radius of the site boundary using MAGIC, 20 ecologically sensitive receptors were identified, these are shown at page 15 of the AQA (Appendix 9).

5.49 It should be noted that the IAQM Guidance only requires the assessment of ecological receptors which are located within 200 m of the affected road network. For robustness, all ecological receptors within the proposed development site and those within 200m of the affected road network have been included within the air quality assessment as shown below.

Site ID	Site	Designation	UK NGR (m)		Distance from Site (km)	Distance from Nearest Affected Road (m)
			X	Y		
E1	Potter Holes Plantation	LNR	434142	399524	1.73	15
E2	Potter Holes Plantation	LNR	434323	399828	1.39	15
E3	Worsborough Country Park	LNR	434398	402843	1.56	244
E4	Worsborough Country Park	LNR	433929	403620	2.47	262
E5	Worsborough Country Park	LNR	434701	402818	1.38	17

Table 5.6 Assessed Ecological Receptors

5.50 In accordance with the IAQM Guidance, multiple receptor locations have been positioned on the conservation site. This is to determine the effects at different locations of the site.

5.51 It should be noted that the IAQM Guidance only requires the assessment of ecological receptors which are located within 200 m of the affected road network. Due to the distance from the modelled road network, ecological receptor E3 has been scoped out of the Air Quality Assessment.

5.52 It should be noted that Natural England Guidance requires a detailed assessment of the impact of emissions from road traffic where a predicted traffic flow change is greater than 100 (AADT¹⁴) or more, or an increase of 200 AADT or more of heavy-duty vehicles. Due to associated traffic flow changes, E4 and E5 can be scoped out of this air quality assessment in line with the Natural England HRA guidance.

¹⁴ Annual Average Daily Traffic

Emission Sensitive Receptors

5.53 The Design Manual for Roads and Bridges (DMRB) considers any receptor within 200m of a road source to be potentially affected by that operation. These receptors are shown at Appendix 9. The AQOs only apply at locations where the public may be exposed to pollution for a sufficient period for there to be any measurable health impact. The average period and AQO involved will determine which locations are considered to be sensitive receptors. For annual mean NO₂ and particulate matter with mean hydraulic diameter of less than 10µm) AQOs, LAQM.TG(16) considers typical locations for sensitive receptors to include:

- Residential properties;
- Hospitals;
- Schools; and,
- Care homes.

5.54 Figure 5.1 p34 identifies sensitive roadside residential receptors that are representative of worst-case exposure locations and have been chosen as the closest residences to each road which may be affected by the traffic associated with the proposed development. However, this is not an exhaustive list and there may be other locations within the vicinity of the site that may experience air quality impacts as a result of the proposed development that have not been individually identified above. The list of receptors identified can be found in Table 5.7 below.

Discrete Sensitive Receptor		Modelled Receptor Height (m)	UK NGR (m)	
			X	Y
R1	179 Upper Hoyland Road	1.5	436042	401434
R2	High Royd House, High Royd Lane	1.5	435946	401544
R3	12 Shortwood Villas	1.5	435481	401443
R4	261 Sheffield Road	1.5	434650	400689
R5	33 Wood View	1.5	434856	400379
R6	10 Sheffield Road	1.5	435336	400356
R7	86 Sheffield Road	1.5	435564	400161
R8	Stonehurst, Sheffield Road	1.5	435541	400129
R9	Hood Hill Farm	1.5	436316	397698
R10*	23 Farlow Croft	1.5	433477	398014
R11*	11 Howbrook Close	1.5	433215	397698
R12	29 Fenn Road	1.5	434543	399962
R13*	Tankersley St Peters CofE Primary	1.5	434622	400235

Table 5.7 Modelled Existing Sensitive Receptor Locations

Future baseline

5.55 The future baseline is predicted to increase as a result of the committed developments, including the Hoyland Masterplan Area. As well as the proposed development this also includes the following sites HS64, HS56, HS66 (allocated for residential development in the adopted Barnsley Local Plan) and ES14 (allocated for employment use in the adopted Barnsley Local Plan).

- 5.56 It should be noted that over time, the number of petrol/diesel cars are predicted to reduce and so emissions associated with vehicles are reducing over time.

Identification of Likely Effects

Construction Phase

- 5.57 The main emissions during construction are likely to be dust and particulate matter generated during earth moving (particularly during dry months), or from construction materials. In respect of fires on site it should be noted that suitable management strategies will be in place to prevent burning of any material during the construction phase. The main potential impacts of particulates/dust are:
- Visual – dust plume, reduced visibility, coating and soiling of surfaces leading to annoyance, loss of amenity, the need to clean surfaces;
 - Physical and/or chemical contamination and corrosion of artefacts;
 - Coating of vegetation and soil contamination; and,
 - Health impacts due to inhalation e.g. asthma or irritation of the eyes.
- 5.58 A number of other factors such as the amount of precipitation and other meteorological conditions will also greatly influence the amount of particulate matter generated.
- 5.59 Construction activities can give rise to short term elevated dust/PM₁₀ concentrations in neighbouring areas. This may arise from vehicle movements, soiling of the public highway, demolition or windblown stockpiles.

Particulate Matter

- 5.60 The UK Air Quality Standards seek to control the health implications of respirable particulate matter PM₁₀ (less than 10 micrometres in diameter). However, the majority of particles released from construction will be greater than this in size.
- 5.61 Construction works on site have the potential to elevate localised PM₁₀ concentrations in the area. On this basis, mitigation measures should still be taken to minimise these emissions as part of good site practice.

Dust

- 5.62 Particles greater than 10µm are likely to settle out relatively quickly and may cause annoyance due to their soiling capability. Although there is no formal standards or criteria for nuisance caused by deposited particles, the IAQM 'Guidance on Monitoring in the Vicinity of Demolition and Construction Sites' (October 2018) and the Environment Agency Technical Guidance Note (TGN) M17 states that dust is usually compared with a 'complaints likely' guideline of 200mg/m²/day. Therefore, a deposition rate of 200mg/m²/day is often presented as a threshold for serious nuisance though this is usually only applied to long term exposure as people are generally more tolerant of dust for a short or defined period. Significant nuisance is likely when the dust coverage of surfaces is visible in contrast with adjacent clean areas, especially when it happens regularly. Severe dust nuisance occurs when the dust is perceptible without a clean reference surface.

- 5.63 Construction activities have the potential to suspend dust, which could result in annoyance of residents surrounding the site. Measures should be taken to minimise the emissions of dust as part of good site practice. Recommended mitigation measures proportionate to the risk associated with the development and based on best practice guidance are discussed in earlier in this chapter.

Assessment Results

Construction Phase Effects

- 5.64 Based on the methodology detailed in the page 39 of the AQA (Appendix 9), the potential impact significance of dust emissions associated with the construction phase of the Proposed Development presented is considered to be negligible.
- 5.65 The effects during the construction phase are predicted with regard to the potential for dust nuisance complaints and surface soiling events due to deposition, as opposed to the risk of exceeding any AQOs. All dust impacts are considered to be direct, temporary, short-term and reversible in nature. The impacts are determined to be direct as they occur as a result of activities associated with the development, temporary as they will only potentially occur during the construction phase, short-term because these will only arise at particular times when certain activities and meteorological conditions for creating the level of magnitude predicted combine, and reversible as conditions will return to baseline upon cessation of construction phase activities. With the construction mitigation measures in place detailed below, dust soiling and PM₁₀ during construction are considered not significant in EIA terms.

Operational Phase Effects

- 5.66 Additional vehicle movements associated with the Proposed Development will generate additional exhaust emissions, such as NO₂, PM₁₀ and PM_{2.5}, on the local and regional road networks. In order to quantify potential impacts of these emissions in the vicinity of the site, a detailed dispersion modelling assessment has been undertaken using the ADMS-Roads software package. This model is routinely used in the UK for environmental assessment work.
- 5.67 The likely significant impacts of road vehicle exhaust emissions have been undertaken for the following assessment years:
- 2018 Baseline = Existing baseline conditions;
 - 2029 'Do Minimum' = Baseline Conditions + Committed Development Flows (Local Plan); and,
 - 2029 'Do Something' = Baseline Conditions + Committed Development Flows + Proposed Development Flows.
- 5.68 A baseline assessment year of 2018 has been selected as this is the most recent year for which corresponding traffic data, monitoring and meteorological data is available in accordance with LAQM TG(16).
- 5.69 The development opening years were considered with appropriate 'do-minimum' and 'do-something' scenarios. Mosodi Transport Consultants provided Baseline 2019 and, 2029 'do minimum' and 'do something' scenario traffic data.

5.70 Additional baseline traffic data to support the modelling was sourced from the Department for Transport (DfT) road statistic database for 2018.

5.71 Reference should be made to the AQA Technical Report (Appendix 9) for the:

- Detailed Modelling of Operational Phase Road Vehicle Exhaust Emissions – Method Statement;
- Detailed Modelling of Operational Phase Road Vehicle Exhaust Emissions – Detailed Results Tables; and,
- Theoretical assessment assuming no improvement in emissions from baseline year to future year.

Significance of Identified Effects

Nitrogen Dioxide

5.72 Predicted annual mean NO₂ concentrations were assessed against the AQO of 40 µg/m³. Reference should be made to the AQA Technical Report (see Appendix 9) for detailed results tables of predicted annual mean NO₂ concentrations.

5.73 As stated in Table 5.8, the sensitivity of receptors is determined by the predicted concentration of pollutant at that receptor in the 'do minimum' scenario. i.e. receptors already experience high levels of pollutant exposure are highly sensitive and vice versa.

5.74 As indicated in the AQA Technical Report, the annual mean NO₂ concentration at surrounding existing receptors from the effects of traffic is predicted to be neutral to imperceptible at all sensitive receptors.

5.75 The unmitigated effects are predicted to range from negligible decrease to negligible increase at all remaining sensitive receptors.

5.76 The maximum predicted concentration at any ground floor proposed receptor is not predicted to exceed the AQO for NO₂ and therefore, no further mitigation is required.

Receptor		NO ₂ (µg/m ³)						
		Do Minimum 2029	Do Something 2029	Sensitivity	Dev Contribution	% Change of AQO	Magnitude of Effect	Impact Description
R1	179 Upper Hoyland Road	17.20	17.31	Negligible	0.11	0.27	Neutral	Negligible
R2	High Royd House, High Royd Lane	13.20	13.24	Negligible	0.04	0.10	Neutral	Negligible
R3	12 Shortwood Villas	12.89	12.91	Negligible	0.02	0.05	Neutral	Negligible
R4	261 Sheffield Road	24.43	24.49	Negligible	0.06	0.15	Neutral	Negligible
R5	33 Wood View	27.47	27.63	Negligible	0.16	0.40	Neutral	Negligible
R6	10 Sheffield Road	18.88	19.01	Negligible	0.13	0.32	Neutral	Negligible

Receptor		NO ₂ (µg/m ³)						
		Do Minimum 2029	Do Something 2029	Sensitivity	Dev Contribution	% Change of AQO	Magnitude of Effect	Impact Description
R7	86 Sheffield Road	20.80	20.88	Negligible	0.08	0.20	Neutral	Negligible
R8	Stonehurst, Sheffield Road	17.76	17.82	Negligible	0.06	0.15	Neutral	Negligible
R9	Hood Hill Farm	18.31	18.34	Negligible	0.03	0.07	Neutral	Negligible
R10 *	23 Farlow Croft	10.90	10.91	Negligible	0.01	0.02	Neutral	Negligible
R11 *	11 Howbrook Close	12.40	12.42	Negligible	0.02	0.05	Neutral	Negligible
R12	29 Fenn Road	15.36	15.41	Negligible	0.05	0.12	Neutral	Negligible
R13 *	Tankersley St Peters CofE Primary	21.77	21.81	Negligible	0.04	0.10	Neutral	Negligible

Table 5.8 Significance at the Identified Sensitive Receptors (NO₂)

- 5.77 All impacts are considered to be direct, **permanent** and **long-term** in nature. The impacts are determined to be **direct** as they occur as a result of vehicles travelling to and from the Proposed Development, **permanent** as they will occur throughout the operational phase and **long-term** because these occur during the entire operational phase.
- 5.78 Confidence in these predictions is **high** given that a detailed dispersion modelling assessment has been undertaken using traffic data provided by Ridge Transport Consultants and modelling results have been verified, which is considered to be a robust approach.

Particulate Matter (PM₁₀ & PM_{2.5})

- 5.79 Predicted annual mean ground level PM₁₀ concentrations were assessed against the AQO of 40µg/m³. Reference should be made to the AQA Technical Report (see Appendix 9) for detailed results tables of predicted annual mean PM₁₀ concentrations. As indicated in the AQA Technical Report, the likely significant impact on annual mean PM₁₀ concentration from the development traffic flows is predicted to be **negligible** at all identified receptors.
- 5.80 Predicted annual mean ground level PM_{2.5} concentrations were assessed against the AQO of 25µg/m³. Reference should be made to the AQA Technical Report (see Appendix 9) for detailed results tables of predicted annual mean PM_{2.5} concentrations. As indicated in the AQA Technical Report, the likely significant impact on annual mean PM_{2.5} concentration from the development traffic flows is predicted to be **negligible** at all identified receptors.

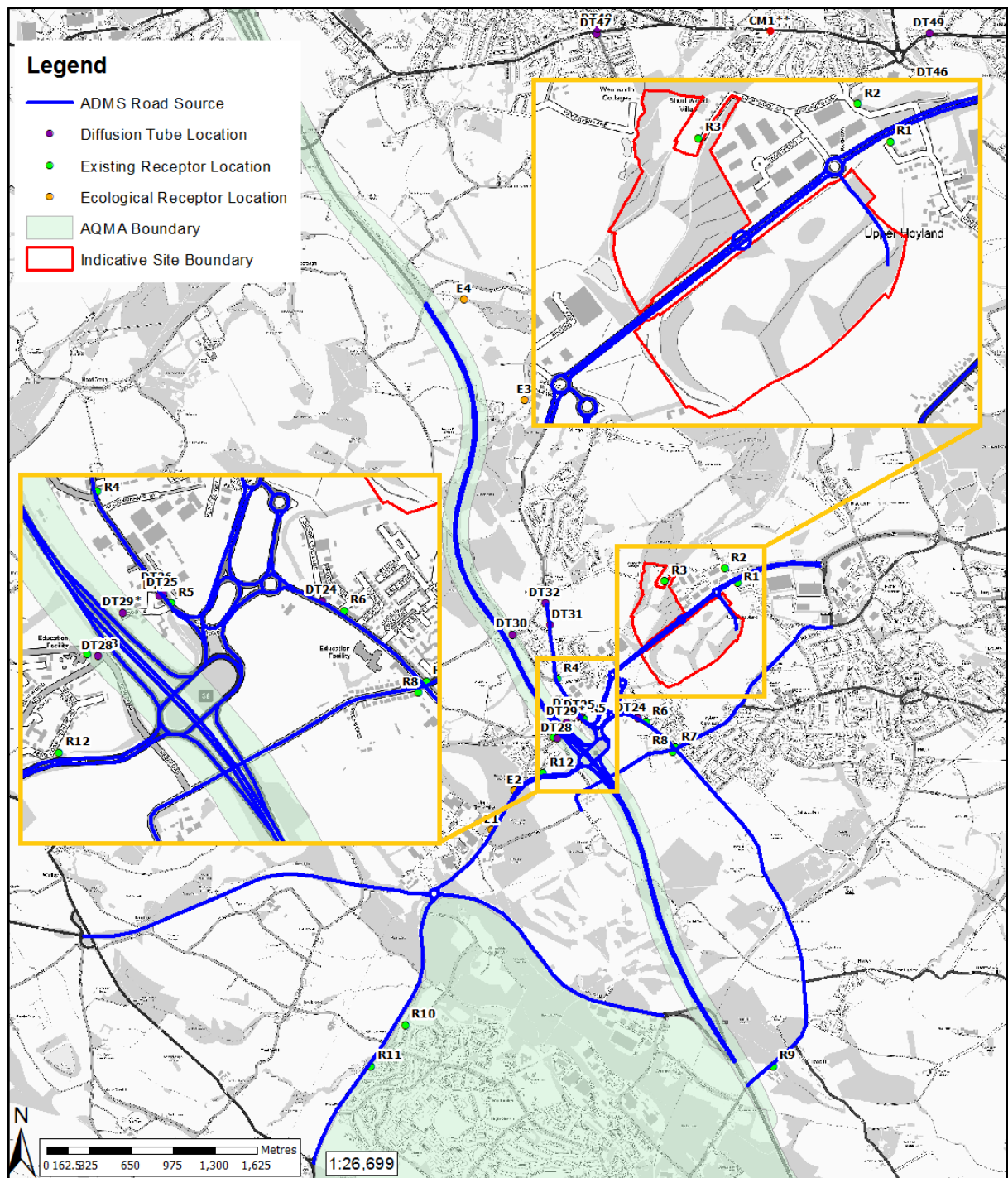


Figure 5.2 Air Quality Study Area

Nitrogen Oxide

- 5.81 Predicted annual mean NO_x concentrations were assessed against the Critical Load of $30 \mu\text{g}/\text{m}^3$. Reference should be made to the AQA Technical Report (see Appendix 9) for detailed results tables of predicted annual mean NO_x concentrations.
- 5.82 As stated in Table 5.9, the sensitivity of receptors is determined by the predicted concentration of pollutant at that receptor in the 'do minimum' scenario. i.e. receptors already experience high levels of pollutant exposure are highly sensitive and vice versa.

- 5.83 As indicated in the AQA Technical Report, the annual mean NO_x concentration at surrounding ecological receptors from the effects of traffic is predicted to be neutral to imperceptible.
- 5.84 The unmitigated effects are predicted to be **negligible** at all remaining sensitive receptors.

Recep ID	Site Name	NO _x (µg/m ³)						
		Do Minimum (2029)	Do Something (2029)	Sensitivity	Dev Contribution	% Change of AQO	Magnitude of Effect	Impact Description
E1	Potter Holes Plantation LNR	25.54	25.64	Low	0.10	0.35	Neutral	Negligible
E2	Potter Holes Plantation LNR	24.84	24.93	Low	0.09	0.30	Neutral	Negligible

Table 5.9 Identified Ecological Receptors, Nearest Affected Roads & Significance (NO_x)

Cumulative Impacts

Construction Phase

- 5.85 It is anticipated that committed developments around the site will all employ the same level of mitigation (e.g. communication, dust management, earthworks, construction and trackout site-specific mitigation measures) as proposed within this assessment during the construction phase and as such, no significant cumulative effects are predicted. Appropriate site-specific mitigation measures associated with the determined level of risk can be found in Section 8.2 of the IAQM Guidance on the Assessment of Dust from Demolition and Construction. The mitigation measures for the proposed development are detailed in at pages 31 and 32 of the AQA (Appendix 9). It is assumed that surrounding developments will use this same guidance to inform their appropriate site-specific mitigation.”

Operational Phase

- 5.86 The traffic data provided by the Mosodi Transport Consultants has specifically included development trips associated with the surrounding Committed Development Sites, including the Hoyland Masterplan area and HS64, HS56, HS66 (allocated for residential development in the adopted Barnsley Local Plan) and ES14 (allocated for employment use in the adopted Barnsley Local Plan).
- 5.87 Cumulative impacts during the operational phase of the proposed development have been considered within the detailed assessment of vehicle exhaust emissions, with the inclusion of the development included within the ‘do something’ traffic data. The magnitude of change allows the impact of the proposed development to be assessed. As the absolute concentration is compared against the AQO, the cumulative likely significant impact of the development is also considered within the assessment.
- 5.88 The impacts associated with any of the above cumulative schemes and any additional Committed Developments is not considered to be significant given that the traffic associated with these schemes are accounted for with the traffic data provided.

Mitigation and Monitoring Measures

Construction Phase

- 5.89 With the standard good practice measures, as presented within pages 31 and 32 of the AQA (Appendix 9), it is not considered that any additional mitigation within the construction phase will be required.

Operational Phase

- 5.90 Using the provided traffic data, the effect of the development is predicted to be **negligible** at all receptors in the assessment year of 2029. While no mitigation is required, best practice measures are included in the Travel Plan for the site which will seek to reduce reliance on single occupancy vehicle trips.

Summary

Construction Phase

- 5.91 Despite the favourable assessment, mitigation measures to reduce pollutant emission from the proposed development including the promotion of sustainable transport options will be implemented at the site. During the construction and operational phases of the Proposed Development residual likely significant impacts are anticipated to be **negligible**.

Operational Phase

- 5.92 Using the provided traffic data, the effect of the development is predicted to be **negligible** at all receptors in the assessment year of 2029. While no mitigation is required, best practice measures are included in the Travel Plan for the site which will seek to reduce reliance on single occupancy vehicle trips.

6. Traffic Movements

Introduction

- 6.1 This chapter of the ES assesses the likely significant effects of the development on the environment in respect of transport and access and has been informed by the Transport Assessment (TA) undertaken by Mosodi Ltd dated December 2019.
- 6.2 This chapter sets out the methodologies adopted in the assessments that have been undertaken both in the Transport Assessment (TA) and in this chapter and identifies how the baseline conditions have been established. It then considers the impact of the traffic generated by the development on the surrounding network and identifies any appropriate mitigation that is required. The description of the development is provided in Chapter 2 of this ES.

Legislative Context

- 6.3 The applicable legislative framework is summarised as follows:
- Highways Act 1980;
 - Construction (Design and Management) (CDM) Regulations 2015.
- 6.4 Improvements to the off-site highway network including the access to the Development are to be delivered using funding secured via Section 106 and an agreement between the highway authority and the applicant under Section 278 of the Highways Act 1980. The CDM Regulations 2015 apply to the design of both the proposed site access arrangements and the proposed off-site highway improvements.

Policy Background

National Planning Policy Framework

- 6.5 Promoting sustainable transport is covered in Section 9 of NPPF. Paragraph 102 states that: Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:
- a) the potential impacts of development on transport networks can be addressed;
 - b) opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;
 - c) opportunities to promote walking, cycling and public transport use are identified and pursued;
 - d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and
 - e) patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places.
- 6.6 Paragraph 109 of the NPPF states that development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.

Planning Practice Guidance

- 6.7 National Planning Practice Guidance, ‘Travel Plans, Transport Assessments and Statements in Decision-Taking’ sets out that “Travel Plans, Transport Assessments and Statements are all ways of assessing and mitigating the negative transport impacts of development in order to promote sustainable development. They are required for all developments which generate significant amounts of movements.”
- 6.8 The guidance explains that Travel Plans are “long-term management strategies for integrating proposals for sustainable travel into the planning process.” and Transport Assessments are “thorough assessments of the transport implications of development¹⁵...”. The guidance also sets out that the development of Travel Plans and Transport Assessments should be an iterative process as each may influence the other¹⁶.
- 6.9 The guidance provides detailed information on when Travel Plans and Transport Assessments are required and what information should be included in each.

Barnsley Local Plan (2019)

- 6.10 The application sites are allocated for employment development within the adopted Barnsley Local Plan (sites ES15 and ES17 respectively) see figure 6.1 (below).
- 6.11 **Policy ES15** identifies criteria for the development of the site. The criteria relevant in respect of highways is as follows (inter-alia):
- Protect the routes of the Green way and Public Rights of Way (PROW) which cross the site.
- 6.12 **Policy ES17** identifies criteria for the development of the site. The criteria relevant in respect of highways is as follows (inter-alia):
- Protect and retain the Green way, public footpaths and bridleways on the periphery of the site.
- 6.13 **Policy T4** states that new development will be expected to be designed and built to provide all transport users within and surrounding the development with safe, secure and convenient access and movement. If a development is not suitably served by the existing highway, or would create or add to problems of safety or the efficiency of the highway or any adjoining rail infrastructure for users, we will expect developers to take mitigating action or to make a financial contribution to make sure the necessary improvements go ahead.
- 6.14 **Policy I1** states that development must contribute as necessary to meet all on and off site infrastructure requirements to enable development to take place satisfactorily.

Hoyland North Masterplan Framework

- 6.15 The Hoyland North Masterplan Framework was adopted by BMBC in December 2019. The relevant sections for highways are as follows:

¹⁵ Paragraph: 002 Reference ID: 42-002-20140306

¹⁶ Paragraph: 005 Reference ID: 42-005-20140306

- protection of existing public rights of way routes and their incorporation within new development layouts, and;
- details of the vehicular movement framework and green and blue infrastructure framework.

Methodology and Assessment Criteria

Scope of the TA

- 6.16 The scope of the TA was discussed and broadly agreed with Highway Officers from Highways England and BMBC at meetings held on 24th October 2019 with BMBC, 14th November 2019 with Highways England and 29th November 2019 with BMBC.
- 6.17 The scoping identified the extent of the network to be included in the submitted TA and the assessment methodologies to be adopted. At the meeting general agreement to the principles of the methodologies was expressed by the attendees.
- 6.18 Subsequent to the scoping discussions a scoping email/note was submitted on the 18th November to BMBC and Highways England. Highways England confirmed their agreement to the methodologies used to establish the impact of the development. At the time of preparation of the TA and this ES, highway officers from BMBC had not responded to the scoping note in writing but did verbally agree the employed methodologies at the meeting held on 29th November 2019.

Extent of the Study Area and Base Data Collection

- 6.19 The study area for the TA as agreed through scoping includes the following junctions to be modelled in detail:
- Junction 1: Proposed New Access Roundabout;
 - Junction 2: Amended Shortwood Roundabout
- 6.20 However, different assessment criteria apply to the ES, therefore the following links have been assessed in this chapter:
1. M1 Southbound;
 2. A61 (west of M1);
 3. M1 Northbound;
 4. A61 Sheffield Road;
 5. A61 Link East of M1 J36;
 6. A6135 South of B6096;
 7. Tankersley lane;
 8. B6096;
 9. A6135 North of B6096;

10. A6195 South of Kestrel Way;
 11. Sheffield Road;
 12. A6195 West of Phase 3;
 13. A6195 East of Phase 3;
 14. Proposed Access Road; and
 15. A6195 East of Phase 2 .
- 6.21 Classified Automatic Traffic Counts undertaken in March 2019 have been provided by AECOM who commissioned the surveys on behalf of BMBC.
- 6.22 Personal Injury Accident (PIA) data for the study area have also been obtained from Crashmap. The data cover a 5 year period (65 months) between 1st January 2013 and 31st May 2018. Accident data was requested from BMBC on 11th December 2019. The accident assessment is included below.
- 6.23 A site audit has been undertaken, the purpose of which was to review the local road network near the site and identify key pedestrian and cycle trip origins, pedestrian and cycle crossing points and other areas of pedestrian activity.

ES Additional Methodology

- 6.24 As well as the assessment carried out within the TA, the methodology of which has been agreed in principle with Highways England and BMBC, consideration has also been given to the guidance contained within the 1993 Institute of Environmental Assessment (now the Institute of Environmental Management and Assessment (IEMA)) publication, 'Guidance Notes No. 1: Guidelines for the Environmental Assessment of Road Traffic', 1993.

Identification of Potential Receptors

- 6.25 In accordance with the IEMA guidelines, the methodology used in this ES chapter includes evaluating:
- Potential effects on local roads and the users of these roads, including public transport users, pedestrians and cyclists; and
 - Potential effects on land uses and environmental resources fronting these roads, including the relevant occupiers and users.
- 6.26 The IEMA guidelines also identify groups, locations and areas which may be sensitive to changes in traffic conditions and which should be considered for assessment. The guidelines also suggest that others could be added if the assessor considers it appropriate. The affected groups, locations and areas identified are:
- People at home;
 - People at work;
 - Sensitive groups including children, the elderly and disabled;

- Sensitive locations such as hospitals, churches, schools and historical buildings;
- People walking;
- People cycling;
- Open spaces, recreational sites, shopping areas;
- Sites of ecological/nature conservation value;
- Sites of tourist/visitor attraction; and
- Accident 'hot spots'.

Identification of Potential Significant Effects

6.27 The IEMA guidelines state that the following environmental effects (Table 6.1) should be considered when assessing traffic from an individual development.

Noise	Fear and Intimidation
Vibration	Accidents and Safety
Visual Effects	Hazardous Loads
Severance	Air Pollution
Driver Delay	Dust and Dirt
Pedestrian (and Cycle) Delay	Ecological Effects
Pedestrian (and Cycle) Amenity	Heritage and Conservation Areas

Table 6.1 Traffic Related Environmental Effects

6.28 Of these effects, some are considered in chapters elsewhere within this ES due to the specialist skills required¹⁷. The following effects (highlighted in bold in Table 6.1 above) have been included in the scope of the assessment:

- Potential effects on the community associated with severance caused by an increase in traffic levels during construction and occupation of the development;
- Potential effects on drivers associated with driver delay caused by additional traffic generated by the development;
- Potential effects on pedestrians and cyclists associated with delays caused by changes in traffic volume or speed of traffic;
- Potential effects on pedestrian and cycle amenity caused by an increase in traffic flow, change in traffic composition and footway width/separation from traffic;
- Potential effects of pedestrians and cyclists associated with fear and intimidation caused by an increase in volume of traffic and its Heavy Goods Vehicle (HGV) composition; and
- Potential effects on highway safety caused by the increase in traffic flow as a result of the development.

¹⁷ Note: Noise and Heritage issues have been scoped out of the preparation of this ES in agreement with BMBC.

Methodology for Prediction of Effects

- 6.29 The estimated traffic generation resulting from the construction and operating phases of the development has been compared with the existing flows in the year of opening to determine the percentage increase on each road that has been taken forward for assessment.
- 6.30 To define the scale and extent of this assessment, the IEMA guidelines identify the following rules-of-thumb by which the assessment is undertaken of the potentially significant traffic-related environmental effects:
- Rule 1 – include highway links where the traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
 - Rule 2 – include any other specifically sensitive areas where traffic flows have increased by 10% or more.

Significance Evaluation Methodology

- 6.31 The significance of each effect will be considered against the criteria contained within the IEMA guidelines, where possible. However, the guidelines state that “For many effects there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed-up by data or quantified information wherever possible.” Such judgements will include the assessment of the numbers of people experiencing a change in environmental impact as well as the assessment of the damage to various natural resources.”
- 6.32 The IEMA guidelines also state that “Assessments should consider the period (possibly the hour) at which the impact is greatest and the period at which the impacts exhibit the greatest change.”
- 6.33 The magnitude of each potentially significant effect has also been considered and an assessment made as to whether the development would result in minor, moderate or major adverse effects and whether the effects would be beneficial or adverse. The criteria used to determine the significance of each of the traffic-related environmental effects is based on the advice given in the IEMA guidelines and is summarised in the paragraphs below.

Severance

- 6.34 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery and is used to describe the factors that separate people from other people and places. For example, severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities.
- 6.35 The effects of severance can be applied to motorists, pedestrians or residents. The IEMA guidelines suggest that changes of traffic flow of 30%, 60% and 90% are regarded as producing ‘minor’, ‘moderate’ and ‘major’ changes in severance respectively. However, there are no predictive formulae which give simple relationships between traffic factors and levels of severance.
- 6.36 The IEMA guidelines state that marginal changes in traffic flow are unlikely to create or remove severance, but that consideration in determining whether severance is likely to be an important issue should be given to factors such as road width, traffic flow and composition, traffic speeds, the availability of crossing facilities and the number of movements that are likely to cross the

affected route. Consideration should also be given to different groups such as the elderly and young children.

- 6.37 Therefore, to assess severance, the current severance caused by traffic and related factors along the roads surrounding the Development has been estimated. The extent to which additional traffic will exacerbate this problem in accordance with the rules contained within the IEMA guidelines has then been assessed.

Driver Delay

- 6.38 The IEMA guidelines state that delays are only likely to be significant when the traffic on the network surrounding a development is already at, or close to, the capacity of the system. The theoretical capacity of a road or a particular junction can be determined by assessing the Ratio of Flow Capacity (RFC) or equivalent. When an RFC value of 0.85 or more is experienced, queuing and congestion are likely to occur during busy periods. Although there are no quantifiable means of determining significance to driver delay, professional judgement is made as to the impact of the development, taking account of the results of the traffic modelling process.

Pedestrian and Cycle Delay

- 6.39 Changes in the volume, composition or speed of traffic may affect the ability of people and cyclists to cross roads, and therefore, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend upon the general level of pedestrian and cyclist activity, visibility and general physical conditions of the crossing location.
- 6.40 Given the range of local factors and conditions which can influence pedestrian and cycling delay, the IEMA guidelines do not recommend that thresholds be used as a means to establish the significance of pedestrian and cycling delay but recommend that reasoned judgements be made instead. As with driver delay, there is no quantifiable means of determining significance to pedestrian and cycle delay, therefore professional judgement is made as to the impact of the Development.

Pedestrian and Cycle Amenity

- 6.41 Pedestrian and cycling amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic.
- 6.42 The IEMA guidelines note that changes in pedestrian and cyclist amenity may be considered significant where the traffic flow is halved or doubled, with the former leading to a beneficial effect and the latter an adverse effect. Professional judgement is used to assess the impact on pedestrian and cycle amenity.

Fear and Intimidation

- 6.43 The scale of fear and intimidation experienced by pedestrians is dependent on the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths, as well as factors such as the speed and size of vehicles.
- 6.44 There are no commonly agreed thresholds by which to determine the significance of the effect. The IEMA guidelines for changes in traffic flow (30%, 60% and 90% are regarded as producing 'minor', 'moderate' and 'major' changes respectively) have therefore been used as the basis for assessing the impact of fear and intimidation.

- 6.45 The IEMA guidelines also note that special consideration should be given to areas where there are likely to be particular problems, such as high speed sections of road, locations of turning points and accesses. Consideration should also be given to areas frequented by school children, the elderly and other vulnerable groups.

Accidents and Safety

- 6.46 Where a proposed development is expected to produce a change in the character of the traffic on the local road network, the IEMA guidelines state the implications of local circumstances or factors which may elevate or lessen risks of accidents, such as junction conflicts, would require assessment to determine the potential significance of accident risk.
- 6.47 The IEMA threshold for changes in traffic flow (30%, 60% and 90% are regarded as producing 'minor', 'moderate' and 'major' changes respectively) have therefore been used as the basis for assessing the impact on highway safety.

Limitations and Assumptions

- 6.48 The potentially significant effects that will be considered as part of the ES are detailed in Table 6.1, p41). As detailed in paragraph 6.18, the scope of this assessment has been determined using IEMA guidelines which indicate that roads should be included where traffic flows are predicted to increase by more than 30% unless the road in question is located within a specifically sensitive area in which case the road should be included if traffic flows increase by 10% or more.
- 6.49 The assessment of the traffic impact has been based on traffic data collected during a series of automated traffic counts. The levels of traffic generated by the Development and its distribution on to the highway network has been ascertained using recognised methodology and agreed with Highways England and Barnsley Council. The TA considers a baseline year of 2019 and a future baseline year of 2029, 10 years after the date of the planning application. The ES looks at a future baseline year of 2029, which reflects the likely completion year of the Development.
- 6.50 No specific limitations with this approach are identified.

Baseline Conditions

Surrounding Highway Network

6195 Dearne Valley Parkway / A61 Sheffield Road / Kestrel Way – Rockingham Roundabout

- 6.51 The A6195 Dearne Valley Parkway runs on an east-west axis to the north of ES15 and south of ES17. It is an adopted dual carriageway road subject to the national speed limit as it passes the site frontage. Approximately 500m west of the Site entrance the A6195 joins with Sheffield Road via a 4-arm standard roundabout (Rockingham Roundabout).
- 6.52 The eastern Sheffield Road arm has provisions for a shared footway / cycleway on either side of the highway.
- 6.53 Kestrel Way on the western arm also has the provisions of a shared footway / cycleway on either side of the highway and has a pedestrian splitter island.

- 6.54 The A6195 northbound and southbound arms are dual carriageway with two lanes in each direction, separated by a central reservation. It has a shared footway / cycleway on both sides of the carriageway to the south. No footway is currently provided to the north of the roundabout, however there are Public Rights of Way in the vicinity which are set back from the carriageway.
- 6.55 Recent improvements to the highway network between the Rockingham Roundabout and J36 of the M1 have taken place in order to accommodate the predicted growth in traffic associated with the Hoyland North Masterplan, amongst other developments. These improvements have been implemented.

A61 Sheffield Road / A6195 Dearne Valley Parkway – Birdwell Junction

- 6.56 Located approximately 900m to the west of the development site the Birdwell Junction is an elongated roundabout connecting the A6195 and the A61.
- 6.57 The A6195 Dearne Valley Parkway northern arm is separated into segregated entry and exit only arms both of which are signal controlled and provide pedestrian crossing facilities. There is a shared footway / cycleway on the nearside lanes on both the northbound and southbound carriageways.
- 6.58 Similarly, the A6195 eastern arm is separated into segregated entry and exit lanes. The exit lane is single carriageway approximately 5m in width with a shared cycleway / footpath on the nearside of the carriageway. The A6195 entry lane is a dual carriageway approximately 10m in width, the approach to the roundabout is controlled by a signalised pedestrian crossing. There is also a shared cycleway / footway on the nearside lane.
- 6.59 The A61 southbound arm is separated into two segregated entry lanes and one exit lane. The entry left only lane is a single carriageway and the ahead lane is a dual carriageway, access onto the roundabout for all movements is signal controlled. The exit carriageway is exit only and has no pedestrians or cyclist provision in order to restrict access to J36 of the M1.
- 6.60 The A61 Sheffield Road westbound arm has a triple entry carriageway and a single exit carriageway. Access onto the roundabout is signal controlled. There is a shared pedestrian / cycleway on the westbound carriageway.

Northern Sheffield Road Roundabout

- 6.61 The Northern Sheffield Road Roundabout is a 4-arm standard roundabout. All arms are single carriageways of approximately 9m in width. Pedestrian splitter islands are provided approximately 5m from the entrance of the roundabout on all 4 arms. Shared pedestrian / cycleways are also provided on all arms of the roundabout.

Southern Sheffield Road Roundabout

- 6.62 The Southern Sheffield Road Roundabout follows the same alignment as the Northern Sheffield Road Roundabout except on the western arm (A6195) which is segregated into entry and exit lanes and provides no pedestrian crossing facilities unlike the other 3 arms.

Junction 36 M1

- 6.63 Junction 36 is located approximately 1km to the west of the development Site the A6195 joins the M1 slip roads and the A61 via the Tankersley Roundabout.

- 6.64 The west A61 arm is a two-lane dual carriageway which is separated by a central reservation. The width of the highway is approximately 7.7m. A shared pedestrian / cycleway is provided on the eastbound carriageway on the offside lane. Access onto the roundabout is controlled by signals.
- 6.65 The M61 northbound and southbound slip roads consist of two lanes and are approximately 6m in width, the access onto the roundabout is again controlled by signals.
- 6.66 A61 access and egress are by separate arms (entry and exit only) to the north east of the roundabout, the movement of which is also controlled by signals.

Shortwood Roundabout

- 6.67 The Shortwood Roundabout is a three-arm roundabout and forms the north eastern boundary of the Phase 2 Site and is approximately 600m to the east of the Phase 3 Site.
- 6.68 The A6195 is a two-lane dual carriageway with a central barrier which routes through the junction, no provisions for pedestrians or cyclists are provided on either the eastbound or westbound carriageway.
- 6.69 Shortwood Way is the northern arm, which is subject to a 30mph speed limit and has a shared pedestrian /cycleway on both sides of the highway. A pedestrian crossing is provided by a splitter island approximately 10m from the roundabout entrance.

Sheffield Road / Hoyland Road / Tankersley Lane

- 6.70 Sheffield Road routes south from the junction with the A6195 and meets Hoyland Road and Tankersley Lane at a 4-way signalised junction.
- 6.71 All arms of the junction are single carriageways and are subject to a 30mph speed limit. Parking is prohibited on all arms with the provision of double yellow line markings. Shared footways are provided on each arm of the junction which measure approximately 2m in width.
- 6.72 On Sheffield Road a signalised pedestrian crossing is provided on the northern arm approximately 100m from the junction. Similarly, a pedestrian crossing is situated approximately 75m from the junction on Hoyland Road.

Sustainable Transport Provision

Public Transport – Bus

- 6.73 There are numerous bus services operating within the vicinity of the site, with the most accessible stops being located on the A61 Sheffield Road to the west of the site. Figure 4 of the Transport Assessment shows the location of nearby bus stops and the walk distance.
- 6.74 The whole of sites ES15 and ES17 are within a 15 minute walk of the nearest bus stops.
- 6.75 Further services are also available from bus stops located to the south of ES15 on Hoyland Road/Hawshaw Lane, which are accessible via the existing public right of way network and the future link road.
- 6.76 During the weekday, the services set out above combine to provide an overall hourly frequency of 7/8 buses in each direction, similarly on a Saturday there are 7 buses in each direction within close proximity to the site.

- 6.77 These services operate for the vast majority of the day commencing between 04:30 to 07:00 and running through until 23:00.
- 6.78 On a Sunday the services combine to provide an overall hourly frequency of 5 buses in each direction.
- 6.79 It is considered that the frequency available from the services on both Hoyland Road and Sheffield Road offer excellent connectivity for a development where many of the employees will work fixed shift patterns.
- 6.80 The bus services provide regular connections to Sheffield Interchange, Barnsley, Elsecar and Wombwell. Further connections to the rest of the region and beyond are available from these destinations.

Public Transport – Rail

- 6.81 Elsecar station is located some 2.7km to the south east of ES17 as shown on Figure 5 of the TA, an extract of which is shown in Image 2.6 of the TA. Elsecar station is situated on the Hallam and Penistone Line and is within a 15 minute cycle of Phases ES15 and ES17.
- 6.82 Trains from Elsecar serve destinations including Barnsley, Wakefield, Sheffield, Leeds and Huddersfield.
- 6.83 Elsecar station benefits from cycle storage, ticket machines, CCTV and step-free access.

Pedestrian and Cycle Facilities

- 6.84 In addition to the footways and cycle facilities that form part of the adopted highway network there are numerous public rights of way that route through the proposed development connecting to and from the road network.
- 6.85 Figure 6.1 (below) shows an extract of the Public Rights of Way map taken from BMBC's website. Footpaths are shown in blue and bridleways in green.
- 6.86 The existing public rights of way are trodden "dog walking" routes. The development parcels to the south and north of the A6195 are linked by a bridleway that routes through the underpass of the A6195 and is shown in green on the attached.
- 6.87 Connection from the site to Hawshaw Lane is provided via a trodden footpath to the south of the development.
- 6.88 Where possible the design team have sought to ensure that the public rights of way can be accommodated without the need to amend their alignment. However, the proposals if approved at reserved matters stage will require diversion of some of the public rights of way that cross the site.



Figure 6.1: BMBC Public Rights of Way Extract

Key: Footpaths are shown in blue and bridleways in green.

Existing and Future Baseline Traffic Flows

- 6.89 Full details of the traffic flows in the vicinity of the site are provided in the TA. As previously stated, traffic data for a baseline year of 2019 has been obtained from a series of manual classified turning count surveys at key junctions in the local area.
- 6.90 To obtain future baseline traffic flows for 2029, local growth factors for the Barnsley 028 area have been obtained from TEMPro and adjusted to take account of committed development and the Hoyland North Masterplan developments. In discussions with BMBC and Highways England regarding the scope of the TA, it was agreed to include the hotel development in the Gateway 36 Phase 1 development within the future baseline scenario. It was also agreed to include an assessment with the impact of the Hoyland North Masterplan area added on top of the development traffic to assess a future design year scenario. The full details of the methodology that have been employed is included within the TA.
- 6.91 The existing 2019 baseline and future 2029 baseline AM and PM peak hour flows for the key links in the vicinity of the Site are summarised in Table 6.2.

Junction Ref	Highway Link	2019 Count				2029 Baseline			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Tot.	HGV.	Tot.	HGV.	Tot.	HGV.	Tot.	HGV.
1	M1 S	1825	123	2023	77	1903	123	2096	77
2	A61 (west of M1)	2318	166	2178	87	2383	166	2238	87
3	M1 N	2238	157	2041	75	2321	157	2119	75
4	A61 Sheffield Road	1656	28	1925	27	1692	28	1959	27
5	A61 Link East of M1 J36	3603	227	3719	116	3830	227	3929	116

6	A6135 S of B6096	857	37	932	23	908	37	983	23
7	Tankersley Lane	507	16	600	13	509	16	602	13
8	B6096	852	38	984	25	997	38	1123	25
9	A6135 N of B6096	1089	15	1227	14	1211	15	1341	14
10	A6195 S of Kestrel Way	2088	146	2382	81	2231	146	2516	81
11	Sheffield Road	314	15	171	1	343	15	197	1
12	A6195 W of Phase 3	2294	153	2457	78	2445	153	2599	78
13	A6195 E of Phase 3	2294	153	2457	78	2445	153	2599	78
14	Proposed Access Road								
15	A6195 E of Phase 2	2265	151	2393	76	2379	151	2499	76

Table 6.2: Baseline Peak Hour Traffic Flows

6.92 The AM and PM peak hours have been converted to 24 hour flows, based on expansion factors derived from the relationship between the surveyed combined AM/PM peak flows and the 24 hours flows. Expansion factors have been calculated for the Total Vehicles and HGV elements separately. The expansion factors are shown in the Table 6.3 below.

	HGV	Total
2hr - AADT	13.05852	5.396903

Table 6.3: Expansion Factors

Junction Ref	Highway Link	2019 Count Survey		2029 Future Baseline		Change in Number of Vehicles		% Change in Vehicles	
		24 Hour		24 Hour		24 Hour		24 Hour	
		Total	HGV	Total	HGV	Total	HGV	Total	HGV
1	M1 S	90142	9067	90953	9067	811	0	0.90%	0.00%
2	A61 (west of M1)	24484	3419	25166	3419	682	0	2.79%	0.00%
3	M1 N	94023	10158	94889	10158	866	0	0.92%	0.00%
4	A61 Sheffield Road	20978	1708	21175	1708	197	0	0.94%	0.00%
5	A61 Link East of M1 J36	37352	4635	39711	4635	2359	0	6.32%	0.00%
6	A6135 S of B6096	10736	716	11286	716	550	0	5.12%	0.00%
7	Tankersley Lane	6643	346	6662	346	19	0	0.29%	0.00%
8	B6096	11018	752	12553	752	1535	0	13.93%	0.00%
9	A6135 N of B6096	13154	1146	14431	1146	1277	0	9.71%	0.00%
10	A6195 S of Kestrel Way	22669	2957	24123	2957	1454	0	6.41%	0.00%
11	Sheffield Road	2460	208	2756	208	296	0	12.03%	0.00%
12	A6195 W of Phase 3	24054	3022	25147	3022	1093	0	4.54%	0.00%
13	A6195 E of Phase 3	24054	3022	25147	3022	1093	0	4.54%	0.00%
14	Proposed Access Road								
15	A6195 E of Phase 2	23633	2957	24751	2957	1118	0	4.73%	0.00%

Table 6.4: Baseline 24 Hour Traffic Flows

Sensitive Locations

6.93 Based on the information at Tables 6.2 and 6.3 (above) it is considered that the following links are potentially sensitive locations as they are close to residential or shopping areas and areas of increased pedestrian activity:

- 4. A61 Sheffield Road;

- 6. A6135 S of B6096;
- 7. Tankersley Lane;
- 8. B6096 Hoyland Road; and
- 9. A6135 Sheffield Road N of B6096.

Identification of Likely Effects

Construction Phase

- 6.94 The increase in the levels of traffic that would be required to trigger an assessment of the potentially significant effects associated with traffic and transport (in accordance with the IEMA guidelines) has been calculated by increasing 2019 base traffic flows detailed in Table 6.5 below by 10% for the potentially sensitive locations (shown in red in Table 6.5 below) and by 30% for other locations. The results are based on a 12 hour working day (a worst case construction day). The resultant traffic increases are summarised in Table 6.5 (below).
- 6.95 The AM and PM peak hours have been converted to 12 hour flows, based on expansion factors derived from the relationship between the surveyed combined AM/PM peak flows and the 12 hours flows. Expansion factors have been calculated for the Total Vehicles and HGV elements separately.
- 6.96 The information contained in Table 6.5 below) demonstrates that on the key HGV routes to and from the Site; A6195 West of Phase 3, A6195 East of Phase 3, A61 Link East of M1, M1S and M1N, a large increase in development related traffic would be required during the construction phase to exceed the IEMA thresholds for a detailed assessment.

Junction Ref	Highway Link	2019 Count		2019 Construction Base + 10% / 30%		Increase in Traffic Required to Exceed 10%/30% Threshold	
		12 Hour		12 Hour		12 Hour	
		Total	HGV	Total	HGV	Total	HGV
1	M1S	73240	7581	95212	9855.3	21972	2274.3
2	A61 (west of M1)	19725	2776	25642.5	3608.8	5917.5	832.8
3	M1 N	76560	8801	99528	11441.3	22968	2640.3
4	A61 Sheffield Road	17004	1378	18704.4	1515.8	1700.4	137.8
5	A61 Link East of M1 J36	30092	3764	39119.6	4893.2	9027.6	1129.2
6	A6135 S of B6096	8786	586	9664.6	644.6	878.6	58.6
7	Tankersley Lane	5437	283	5980.7	311.3	543.7	28.3
8	B6096	9017	616	9918.7	677.6	901.7	61.6
9	A6135 N of B6096	10765	938	11841.5	1031.8	1076.5	93.8
10	A6195 S of Kestrel Way	18351	2406	23856.3	3127.8	5505.3	721.8
11	Sheffield Road	1991	170	2588.3	221	597.3	51
12	A6195 W of Phase 3	19472	2459	25313.6	3196.7	5841.6	737.7
13	A6195 E of Phase 3	19472	2459	25313.6	3196.7	5841.6	737.7
14	Proposed Access Road						
15	A6195 E of Phase 2	19131	2406	24870.3	3127.8	5739.3	721.8

Table 6.5: Increase in Construction Traffic Required to Exceed Thresholds for Assessment

- 6.97 It is recognised that the construction workforce may travel on other routes but, as the development will be phased over a number of years, the number of daily trips is unlikely to exceed the threshold on any identified highway link.
- 6.98 The location of the Site in relation to the major road network with its easy links to the Strategic Road Network allows for appropriate routing options for construction traffic, in particular HGV traffic, with minimal impact and disruption.
- 6.99 It should be noted that the operational traffic is expected to be higher than the construction traffic and that the operational traffic does not exceed any of the thresholds set out above.

Operational Phase

- 6.100 The TA contains full details of how the impact of the development traffic has been assessed in terms of trip generation and distribution. A worst case scenario of all B2 use class has been assumed as the exact final mix of the development is not as yet known.
- 6.101 Table 6.6 compares the predicted traffic generation for the development with the baseline flows during the 2029 AM and PM peak hours to identify any potential links where increases in traffic may exceed the thresholds set out in the IEMA guidelines, therefore requiring further assessment.
- 6.102 The information in Table 6.6 shows that there are no link locations where there is predicted to be increases in traffic as a result of the Development that will exceed the IEMA threshold (30%).

Junction Ref	Highway Link	AM Peak Hour				PM Peak Hour			
		2029 Baseline	Dev	2029 + Dev	% Change	2029 Baseline	Dev	2029 + Dev	% Change
1	M1S	1903	33	1936	1.70%	2096	31	2127	1.48%
2	A61 (west of M1)	2383	45	2428	1.85%	2238	43	2281	1.92%
3	M1 N	2321	40	2361	1.69%	2119	38	2157	1.79%
4	A61 Sheffield Road	1692	18	1710	1.05%	1959	17	1976	0.87%
5	A61 Link East of M1 J36	3830	117	3947	2.96%	3929	113	4042	2.88%
6	A6135 S of B6096	908	27	935	2.89%	983	18	1001	1.83%
7	Tankersley Lane	509	0	509	0.00%	602	0	602	0.00%
8	B6096	997	0	997	0.00%	1123	0	1123	0.00%
9	A6135 N of B6096	1211	19	1230	1.54%	1341	18	1359	1.34%
10	A6195 S of Kestrel Way	2231	135	2366	5.71%	2516	130	2646	5.17%
11	Sheffield Road	343	19	362	5.25%	197	18	215	9.14%
12	A6195 W of Phase 3	2445	154	2599	5.93%	2599	149	2748	5.73%
13	A6195 E of Phase 3	2445	146	2591	5.63%	2599	142	2741	5.46%
14	Proposed Access Road								
15	A6195 E of Phase 2	2379	63	2442	2.58%	2499	61	2560	2.44%

Table 6.6: 2029 Increases in Peak Hour Traffic Volumes Resulting from the development

Significance of Identified Effects

Severance

- 6.103 In accordance with the IEMA guidelines, receptors are likely to experience 'minor' changes in severance when traffic flows change by 30% or more with changes in traffic flows of 60% and

90% producing ‘moderate’ and ‘major’ changes in severance. As shown in Table 6.6 traffic changes in excess of the 30% threshold are not expected on any link in the peak hour, therefore the effect of the development on severance is negligible.

Driver Delay

- 6.104 Delays to non-development traffic can occur on the network due to the additional traffic generated by the development. The IEMA guidelines note that these additional delays are only likely to be significant when traffic on the network surrounding the development is already at, or close to capacity.
- 6.105 The TA identified that there will be increases in congestion at the two assessed junctions as a result of the completed development, however these junctions still operate with significant spare capacity in the 2029 Design Scenario. The impact of the development on driver delay is considered to be negligible.

Pedestrian and Cycle Delay and Amenity

- 6.106 The IEMA guidelines indicate that increase in traffic of around 30% can double the delay experienced by pedestrians and cyclists attempting to cross the road. Table 6.6 p51 indicates that the changes in traffic as a result of the development will not result in any significant delay to pedestrians and cyclists and therefore the effect will be negligible.

Fear and Intimidation

- 6.107 As detailed previously, levels of fear and intimidation experienced by pedestrians are dependent on the volume of traffic, its HGV composition and factors such as speed, size and proximity of vehicles.
- 6.108 The link which will experience the greatest increase in HGV traffic is the A6195 east and west of the proposed ES15 roundabout experiencing an increase of 1.19% and 1.36% across the day respectively. This is significantly below the 10% threshold for detailed assessment.
- 6.109 All other links experience a reduced increase in HGV movements.
- 6.110 The effect of the development on fear and intimidation is considered to be negligible.

Accidents and Safety

- 6.111 A review of PIA data was not undertaken as part of the TA because the required data had not been provided by the highway authority. A summary assessment is provided as part of this ES below.
- 6.112 Personal injury accident data has been obtained from www.crashmap.co.uk for the highway network in the vicinity of the site for the most recently available five year period between 1st January 2014 and 31st December 2018 (most recent five year period available).
- 6.113 The study area includes area of A6195 Birdwell Roundabout and the M1 J36. An overall summary of accidents is available in Table 6.7, p50.

	2014	2015	2016	2017	2018	Total
Slight	3	3	9	4	2	21
Serious	0	0	0	1	1	2
Fatal	0	0	0	0	0	0

Total	3	3	9	5	3	23
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Table 6.7 Personal Injury Accident Analysis – Severity by year

- 6.114 As Table 6.7 shows, there were a total of 21 slight accidents, 2 serious accidents and no fatal accidents recorded during the 5-year period within the vicinity of the site.
- 6.115 A collision cluster is shown at Birdwell Roundabout where 9 accidents have been recorded in the 5-year period, one of which was severe involving a motorcyclist and a car with the motorcyclist being the severely injured party.
- 6.116 A second collision cluster is identified at Tankersley Roundabout where 8 slight accidents were recorded over the 5-year period.
- 6.117 Two slight accidents were recorded at Shortwood Roundabout, both of which were rear shunts.
- 6.118 The second severe accident occurred on Rockingham Roundabout involving an LGV which was caused by a loss of control by the driver.
- 6.119 Whilst any accident is regrettable, having reviewed the accidents in detail there is no evidence to suggest that the proposed development will materially exacerbate the existing situation.
- 6.120 The assessment has been made of the causation factors of these accidents and it is considered that the additional traffic generated by the development will not have any significant adverse impact on highway safety and therefore the effect is negligible.

Cumulative Impacts

- 6.121 The assessment scenarios that have been reviewed within this chapter reflect the design scenarios and methodology for predicting the traffic that was agreed as appropriate with BMBC and Highways England through the scoping of the Transport Assessment.
- 6.122 The assessed scenarios and the traffic that makes up these scenarios is consistent with the traffic data that has been used in the AQA.
- 6.123 The 2029 design scenario includes all committed development and also the wider Hoyland North Masterplan area (see Figure 2.2 p7). Therefore the 2029 design scenario represents the cumulative impact assessment as agreed with the highway authorities when scoping the TA. It was agreed that a development scenario without this traffic included would not be necessary. If the committed and allocated traffic was removed it would be required to be replaced by background traffic growth i.e. replacing one with the other.
- 6.124 Furthermore, it is not necessary to undertake an assessment that compares scenarios without the wider allocation and committed traffic being included because it will not amend the conclusions of the chapter. If an alternative assessment was completed it would remove the allocations and committed traffic from both the 'before' (baseline/do minimum) and 'after' (design/do something) scenarios and therefore the net change in traffic flows would be the same in both assessments.

Mitigation and Monitoring Measures

Mitigation Measures

- 6.125 Whilst the assessment has identified negligible effects on most assessment criteria, good practice has been followed and a number of mitigation measures have been identified to further reduce the impact of the Development during both its construction and operation phases.
- 6.126 A summary of the traffic and transport related environmental measures incorporated into the Development to control, avoid, reduce or compensate for any traffic-related environmental effects for the construction phase is provided in Table 6.8, and, for the operational phase, in Table 6.9 (below).

Mitigation Measure	Effect to be Addressed	Rationale
Wheel Wash & Road Sweeping	Accidents and Safety	Washing facilities will prevent vehicles leaving mud on the local road network which could impact on road safety.
Implementation of a Construction Traffic Management Plan including a Delivery Route Plan	- Severance - Driver Delay - Pedestrian and Cycle Delay - Pedestrian and Cycle Amenity - Fear and Intimidation - Accidents and Safety	The Construction Traffic Management and Delivery Route Plan will define the hours during which deliveries can be made to and from the site and also the routes that vehicles will take. This will ensure that vehicle movements are spread throughout the day avoiding peak hours on the road network reducing the effect on driver delay. Deliveries can also be timed if necessary, to avoid peak times for pedestrian movement such as school start and finish times so as to limit the effect of additional HGV movements on severance, pedestrian delay and amenity and fear and intimidation.

Table 6.8: Traffic-related Environmental Measures during the Construction Phase

Mitigation Measure	Effect to be Addressed	Rationale
Implementation of a Travel Plan	- Driver Delay - Pedestrian and Cycle Delay - Pedestrian and Cycle Amenity - Fear and Intimidation	The Travel Plan that has been prepared for the Development sets out a package of measures aimed at promoting sustainable development. This includes measures to encourage and increase in the journeys undertaken on foot and by bicycle. Measures such as these are likely to not only reduce the volume of traffic generated by the proposed development, but also boost the confidence of pedestrians and cyclists resulting in a minor beneficial effect as these road users are less likely to be intimidated by increases in traffic volumes.

Table 6.9: Traffic-related Environmental Measures during the Operational Phase

Residual Effects

- 6.127 Taking into account the effect of the mitigation measures detailed in Tables 6.8 and 6.9 above the residual impact of the traffic from the development during both its construction and operational phases is considered to be negligible

Summary

- 6.128 This chapter was prepared by Mosodi Ltd to assess any potentially significant environmental effects that could arise from the change in traffic flows during the construction and operational phases of the development. The assessment has been undertaken in accordance with the

IEMA guidelines, the details of which are discussed in the section on ES Additional Methodology. The methodology behind the preparation of the TA is also discussed.

- 6.129 The assessment of the impact of construction traffic concluded that the increase in traffic during the construction phase would only result in an increase in traffic routeing from the Strategic Road Network via the road network towards the site and would never exceed the 10% or 30% threshold considered to be significant depending on the sensitivity of the link.
- 6.130 The assessment of operational traffic impacts concluded that there were no link locations that are predicted to encounter significant increases in traffic as a result of the development.
- 6.131 A number of mitigation measures have been identified which are to be included as part of the development. These mitigation measures include minor improvements to three junctions on the local highway network. The implementation of a Construction Traffic Management Plan will ensure the impact of additional HGVs during the construction period is kept to a minimum and the implementation of a Travel Plan will encourage and promote sustainable travel to the development once operational.
- 6.132 The results of this assessment have indicated that the potential environmental effects resulting from the increase in traffic generated by the development are predicted to be minor or negligible.

7. Ecology and Associated Loss of Habitat

Legislative Context

7.1 The following legislation and European Directives afford protection to wildlife and have been used to inform this assessment:

- Natural Environment and Rural Communities (NERC) Act 2006;
- Wildlife and Countryside Act (1981) (as amended);
- The EC Birds Directive (Directive 79/409/EEC), as translated into UK law by The Habitat and Species Regulations 2010 (as amended);
- The EC Habitats Directive (Directive 92/43/EEC) as translated into UK law by The Habitat and Species Regulations 2010 (as amended);
- The Protection of Badgers Act (1992); and
- The Hedgerow Regulations (1997).

Policy Background

National Planning Policy Framework (NPPF)

7.2 Paragraph 170 of the NPPF states that *“Planning policies and decisions should contribute to and enhance the natural and local environment by:*

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.”

7.3 Paragraph 170 of the revised NPPF also states that:

“d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.”

7.4 With regard to planning applications and biodiversity, Paragraph 175 of the NPPF states that:

“When determining planning applications, local planning authorities should apply the following principles:

a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits

of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

- c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.”*

- 7.5 In Paragraph 180, the revised NPPF advises that “*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should: c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*”

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- 7.6 The following local planning policies are of relevance to this assessment:
- 7.7 **Section 8 Economy** - The site comprises parts of two employment allocations as follows, for which the two individual policies below refer, in addition to the key strategic policy areas.
- 7.8 **Site ES15 Shortwood Extension** - Regard has been given in accordance with the policy to impacts on the adjoining Shortwood and Hay Green LWS; habitats within the south west corner of the site allocation are not within the proposed site, with regard given to this area and the species it may support and consideration given to the presence of the Greenway and Public Right of Way through the allocation to make provision for these.
- 7.9 **Site ES17 Land South of Dearne Valley Parkway** - Regard is given to the protection of the more valuable and semi-natural areas of the site including grassland, pond, woodland and hedgerows and to the protected species this area may support with consideration given to the presence of the Greenway, Public Right of Way and Bridleway at the site to make provision for these.
- 7.10 **Policy GI1 Green Infrastructure** - Policy seeks to ensure that an integrated network of connected and multifunctional Green Infrastructure (GI) is available throughout the area, linking with key identified GI corridors and features, including, of most relevance to this assessment, the Dearne Valley Nature Improvement Area. GI will be secured by protecting open space, creating new open spaces as part of new development and by using developer contributions to create and improve GI. The policy is supported by a Green Infrastructure Strategy.
- 7.11 **Policy GS1 Green Space** - Policy seeks to ensure a range of valuable green areas for differing needs, including those for wildlife and biodiversity, with any losses of green space replaced appropriately with an at least equivalent quality, quantity and accessibility. Existing green space is ranked to identify where improvements can be made and which areas should be afforded protection from development.
- 7.12 **Policy BIO1 Biodiversity and Geodiversity** - The policy seeks to protect and enhance existing habitats, species and sites of ecological value, including the key floodplains strategic

wildlife corridors and maximise and provide biodiversity within new developments. Effective mitigation and/or compensation must be provided where loss of biodiversity features cannot be avoided. Of particular relevance to this assessment is the location of the development within the Dearne Valley Green Heart Nature Improvement Area, as well as the nearby presence of a number of locally designated sites, protected species and ancient woodland. Enhancement and creation of linkages are encouraged to support the policy aims, alongside habitat creation. As well as ensuring no-net loss of biodiversity, developments within the NIA should include quantifiable, significant benefits such as:

- New woodland;
- New wetland;
- Enhancing areas of poor environmental quality;
- Improving public access, or
- Improving the management of existing habitat.

7.13 **Policy CC4 Sustainable Drainage Systems (SuDS)** - The use of SuDS to manage surface water drainage is sought. For this assessment, the value of SuDS as providing wildlife habitat and its contribution to local and wider GI is relevant.

7.14 The following Supplementary Planning Documents have been considered:

- Trees and Hedgerows (May 2019)
- Biodiversity and Geodiversity (May 2019)

7.15 Also of relevance is the Local Biodiversity Action Plan (LBAP) for Barnsley detailing habitats and species of local importance.

Methodology and Assessment Criteria

7.16 This chapter assesses the likely significant effects of the development on the environment in respect of biodiversity and ecology. This assessment sets out the methods used to assess the baseline conditions currently existing at the site and surroundings, the potential direct and indirect impacts of the development on biodiversity, the mitigation required to prevent, reduce or off-set the impacts and the cumulative and residual impacts. The assessment is set within the relevant planning and legislative context applicable to ecological and nature conservation resources.

Approach

7.17 All survey methodologies used within the assessment followed the published guidelines as accepted by the statutory and non-statutory agencies, including Natural England (NE) and the Chartered Institute for Ecology and Environmental Management (CIEEM). This Ecological Impact Assessment (EclA) follows the standard current guidance in place at the time of writing in 2020, as set out by the CIEEM (CIEEM, 2016) and as recommended by NE.

7.18 For the purposes of this chapter the term 'Site' refers to all land within the red line boundary as shown at Appendix 1. The term 'Study Area' relates to the areas covered by the ecological surveys and desk-based survey which varies as appropriate for the ecological feature being

considered, due to its sensitivity, size of home range etc., as well as the nature of predicted impacts. The study areas used for the desk study are defined below.

- 7.19 The site was originally surveyed in 2015 at which time an Extended Phase 1 Habitat Survey was undertaken with a series of faunal surveys also undertaken in 2015. Surveys have been updated since this time including in 2019. Full details of survey dates are provided within the next section. Where update surveys are ongoing at this time, the assessment is based on the existing survey data. Should the additional surveys provide additional data of significance to this assessment. Any additional assessment will be provided in an addendum.

Methodology

- 7.20 An ecological desk study was completed to collate current baseline data from statutory and non-statutory sources. The following data were gathered:
- Records of statutorily designated sites of international importance (Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites), national/regional (Sites of Special Scientific Interest (SSSI)), or local importance (Local Nature Reserves (LNR)) within 10km, 2km and 1km of the Site respectively.
 - Records of non-statutorily designated sites for nature conservation (Local Wildlife Sites (LWS) within 1km of the Site
 - Habitats of importance for nature conservation including ancient woodlands and Habitats for Principal Importance (HPI) under the Natural Resources and Environment Act (NERC) Act 2006 within or adjacent to the Site.
 - Records of legally protected and notable species (including Species of Principal Importance (SPI)) under the NERC Act within 1km of the Site.
- 7.21 Information was sourced from Sheffield Biological Records Centre (SBRC) and South Yorkshire Bat Group (SYBG). Online resources, including data available through the MAGIC website (www.magic.gov.uk) were used to supplement the baseline data and reviewed in order to gain an overview and identify features of interest in the wider landscape.
- 7.22 Results of the desk study are summarised below and illustrated at Appendix 10 (plan ref: 6424-E-7.2).

Field Survey

- 7.23 An Extended Phase 1 Habitat Survey of the Site was carried out in accordance with the standard Joint Nature Conservation Committee (JNCC) methodology (JNCC, 2010) in 2015, 2018 and 2019. Details of the methodology are presented within the Ecological Appraisal technical report at Appendix 10.
- 7.24 Hedgerows were additionally surveyed individually using the Hedgerow Evaluation and Grading System (HEGS) (Clements, D. and Toft, R. 1992) and also assessed against the Wildlife and Landscape criteria of the Hedgerow Regulations 1997 (DEFRA, 1997).
- 7.25 Detailed fauna surveys were carried out in accordance with the relevant survey methodology for that species as recommended by CIEEM and NE. Methodologies used are presented within the relevant technical report for that species at Appendix 10.

- 7.26 Detailed survey methodologies for faunal surveys undertaken and any limitations encountered are provided in the species-specific reports in Appendix 10. A summary of the surveys undertaken is provided in Table 7.1 p60.

Reference	Survey	Dates
7.1	Compressed Ecological Appraisal	
7.2	Presence/absence survey as described in the Great Crested Newt Mitigation Guidelines (English Nature 2001) eDNA surveys on ponds north of Birdwell (within 500m of the site) following the methodology approved by Natural England	1 st May, 8 th May, 15 th May, 23 rd May, 4 th June and 8 th June 2015 July 2018
7.3	Activity Surveys comprising transect surveys in each month from April to September based on the methods outlined in the Bat Surveys Good Practice Guidelines. Automated Static Bat Detector Survey with one static detector deployed from April to September in strategic locations within site. Ground assessment of trees and buildings for potential roost features.	21 st May, 18 th June, 16 th July, 6 th August and 21 st /22 nd September 2015. Updated in September 2019 May, June, July, August and September 2015. Updated in September 2019 8 th June 2015. Updated on 8 th May 2017
7.4	Breeding bird surveys with the methodology broadly based on that of Territory Mapping as used for the British Trust for Ornithology (BTO) Common Bird Census (CBC).	3 th April, 27 th May and 22 nd June 2015
7.5	Presence/absence survey following survey protocol outlined in the Herpetofauna Workers Manual (Gent and Gibson, 1998) and the Froglife Advice Sheet 10 - Reptile Survey (Froglife 1999).	4 th June, 8 th June, 4 th September, 10 th September, 21 st September, 25 th September and 29 th September 2015
7.6	Presence/absence survey as described in the standard methodology outlined within Strachen <i>et al</i> (2011)	2 nd June 2016

Table 7.1: Technical Report Appendices – detailed within Appendix 10

- 7.27 Results of all surveys are summarised in this chapter with habitats and target notes illustrated at Appendix 10.

Ecological Evaluation

- 7.28 Evaluation has been made in accordance with the CIEEM guidance for EclA, which recognises that evaluation is a complex process and that a range of factors need to be considered in attributing value to ecological features. Various characteristics can be used to identify features that are likely to be important in terms of biodiversity, including:

- Naturalness;
- Animal or plant species that are rare or uncommon, either internationally, nationally or more locally;

- Ecosystems and their component parts which provide the habitats required by the above species, populations and/or assemblages;
- Endemic species or locally distinct sub-populations of a species;
- Habitat diversity, connectivity and/or synergistic associations (eg. Networks of hedgerows and areas of species-rich pasture that provide important feeding habitat for a rare species, such as greater horseshoe bat);
- Plant communities (and their associated animals) that are considered to be typical valued natural/semi-natural vegetation types – these will include examples of naturally species poor communities;
- Species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change;
- Species rich assemblages of plants and animals;
- Typical faunal assemblages that are characteristic of homogenous habitats.

7.29 The ecological features that may be affected by the Development have been evaluated within a geographical framework based on the ecological status of the features, but which also reflects a wide range of legislation and governmental guidance. The significance of impacts is then assessed based on this frame of reference and as indicated in Table 7.2.

Level of Value	Examples
International and European	An internationally or European designated site or candidate site (SPA, pSPA, SAC, cSAC, pSAC, Ramsar site, Biogenetic Reserve) or an area which meets the published selection criteria for such designation, irrespective of whether or not it has yet been notified. A viable area of a habitat type listed in Annex I of the Habitats Directive or smaller areas of such habitat which are essential to maintain the viability of a larger whole. Any regularly occurring population of an internationally important species, which is threatened or rare in the UK (i.e. it is a UK Red Data Book species or listed as occurring in 15 or fewer 10km squares in the UK) or of uncertain conservation status or of global conservation concern. A regularly occurring, nationally significant population/number of any internationally important species.
National	A nationally designated site (SSSI, NNR, Marine Nature Reserve) or a discrete area, which meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective of whether or not it has yet been notified. A viable area of a priority habitat identified as a habitat of Principal Importance or smaller areas of such habitat which are essential to maintain the viability of a larger whole. Any regularly occurring population of a nationally important species which is threatened or rare in the region or county (local BAP). A regularly occurring, regionally or county significant population/number of any nationally important species.
Regional (i.e. North)	Viable areas of key habitat identified in the Regional BAP or smaller areas of such habitat which are essential to maintain the viability of a larger whole.

Level of Value	Examples
	Viable areas of key habitat identified as being of Regional value in the appropriate Natural Area profile. Any regularly occurring, locally significant population of a species listed as being nationally scarce which occurs in 16-100 10km squares in the UK, or in a Regional BAP or relevant Natural Area on account of its regional rarity or localisation. A regularly occurring, locally significant number of a regionally important species. Sites which exceed the County-level designations but fall short of SSSI selection guidelines, where these occur.
County (South Yorkshire)	Semi-natural ancient woodland greater than 0.25 ha. County/Metropolitan sites and other sites which the designating authority has determined meet the published ecological selection criteria for designation, including Local Nature Reserves selected on County/metropolitan ecological criteria (County/Metropolitan sites will often have been identified in local plans). A viable area of habitat identified in County BAP. Any regularly occurring, locally significant population of a species which is listed in a County/Metropolitan “red data book” or BAP on account of its regional rarity or localisation. A regularly occurring, locally significant number of a County/Metropolitan important species.
Local (with further sublevels as appropriate)	Areas of habitat considered to appreciably enrich the habitat resource within the context of the Parish or neighbourhood (e.g. species-rich hedgerows). Local Nature Reserves selected on Parish ecological criteria.

Table 7.2: Geographic Frame of Reference

- 7.30 Features with a value of Local or above were considered to represent ‘Important Ecological Features’ (IEF). Those features not meeting the criteria for IEFs were classified as having below local (that is, not considered to appreciably enrich the habitat resource at the local level, although they may provide some habitat diversity within the immediate context of the site itself), or Negligible ecological importance. These features are excluded from further assessment given that impacts on such features are considered insignificant regardless of the nature or magnitude of the potential impact.
- 7.31 The likelihood that a change/activity will occur as predicted has a degree of confidence assigned. The categories of confidence used are provided in Table 7.3.

Level of Confidence	Estimated Probability
Certain / Near-Certain	Probability estimated at 95% chance or higher
Probable	Probability estimated below 95% but above 50%
Unlikely	Probability estimated below 50% but above 5%
Extremely Unlikely	Probability estimated at less than 5%

Table 7.3: Level of Confidence in Predictions

- 7.32 The impacts of the Development have been predicted, taking into account different stages and activities within the development process. Impacts have been considered both individually and cumulatively. When describing impacts on an ecosystem, structure or function, reference is made to the terms as described in Table 7.4.

	Definition of the parameter
Positive or Negative	Whether the impact has a positive or negative effect
Extent	The area of which the impact occurs
Magnitude	The size or amount of an impact

	Definition of the parameter
Duration	The time for which the impact is predicted to last prior to recovery or replacement of the resource or feature
Reversibility	Whether the impact is permanent (i.e. irreversible) or temporary (i.e. reversible)
Timing and Frequency	How often the impact occurs (e.g. repeated noise from piling work) and when it occurs (e.g. vegetation clearance undertaken outside of the bird breeding season).

Table 7.4: Terms used to Describe Impacts

7.33 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) require that attention be paid to all likely forms of effects. These may be:

- Direct or indirect;
- Short or long-term;
- Intermittent, periodic or permanent; and
- Cumulative.

7.34 Potential effects prior to mitigation include:

- Direct loss of habitats and associated flora and fauna within the site boundary, interruption of wildlife corridors, decrease in value to wildlife through reduction in species and/or habitats;
- Indirect effects on retained vegetation within and bordering the site, through increase disturbance and through local changes in soils, drainage and hydrology;
- Potential effects upon protected and scarce species through disturbance;
- Operational effects such as pollution incidents from chemical spills, pollution of streams and fragile habitats from runoff and incorrect storage of materials; and
- Long-term effects arising as a result of the favourable restoration of the site to beneficial after-use.

Magnitude

7.35 Magnitude of effects has been determined based on the following scales:

Magnitude of Impact	Criteria for assessing impact
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.
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post Development character/composition/attributes of the baseline will be materially changed.
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.

Magnitude of Impact	Criteria for assessing impact
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation

Table 7.5: Methodology for Assessing Magnitude

- 7.36 The ecological significance of any impact has been assessed, based upon the likely effect on the structure, function or conservation status of the feature. The assessment of impact significance is undertaken both to identify the need for mitigation and also to assess residual effects.

Significance criteria

- 7.37 The significance of likely effects was determined by identifying those ecological features likely to be affected. The features were evaluated to identify the important ones, i.e. those which, if their level of importance reduced, national or local policies (or in some cases legislation) would be triggered. The nature of the individual and combined impacts (positive or negative) were characterised on each important feature, to determine the longevity, reversibility and consequences for the feature in terms of ecological structure and function and/or the conservation status of a habitat or species. As part of the process of determining whether there is likely to be an effect on the integrity of a site or ecosystem, the following questions are considered:

- Will any site/ecosystem processes be removed or changed?
- What will be the effect on the nature, extent, structure and function of component habitats?
- What will be the effect on the average population size and viability of the component species?

- 7.38 Once an impact is considered to be significant then the scale of impact is assessed on a geographical scale (i.e. international, national, regional, county etc.) as above. For example, the impact may not be significant at a county scale but is significant at a more local scale. For the purposes of this Chapter, likely significant effects on IEFs are those identified as being of significance at a local or above level.

Mitigation, Compensation and Enhancement

- 7.39 For the purposes of the EclA, impacts on IEFs are assessed without mitigation in place. Mitigation or compensation is identified for significant impacts on features of nature conservation importance. In line with current CIEEM guidelines, the mitigation proposals for the Development should aim to:

- Avoid negative ecological impacts – especially those that could be significant;
- Reduce negative impacts that cannot be avoided; and
- Compensate for any remaining significant ecological impacts.

- 7.40 Priority is given to avoidance of impacts, where possible, through design and/ or regulation of the Development through aspects such as timing, storage of materials etc. Where this is not possible opportunities are sought to reduce the impacts as much as is feasible. If significant impacts cannot be avoided through mitigation, then compensation that is considered appropriate to offset the negative impacts of the Development should be outlined. Where it is

known to exist, evidence is supplied for the effectiveness of proposed mitigation or compensation.

Baseline Conditions and Valuation of Ecological Features

- 7.41 The site was originally surveyed in 2015 at which time an Extended Phase 1 Habitat Survey was undertaken with a series of faunal surveys also undertaken in 2015. Surveys have been updated since this time including in 2019. Habitats have remained broadly similar during this time with successional development apparent in unmanaged areas.
- 7.42 The site largely comprises establishing plantation woodland and improved pasture, with associated native hedgerows along several linear edges of the plantation areas. Two compartments of species-poor grassland are located in the northern parcel, which comprised actively farmed arable land in May 2017. Several small areas of semi-improved grassland are beginning to scrub over as natural succession through lack of management has occurred. Other habitats recorded included an attenuation pond and drainage channel (partially culverted). The Site supports potential habitat, in varying degree of suitability, for a number of protected species, including badgers, bats, water vole, great crested newts and reptiles, with habitats for a range of other local priority species including birds, amphibians and mammals. The presence of bats, great crested newts and a number of bird species have been variously recorded at the site since 2013.

Desk Study

Designated sites

- 7.43 Table 7.6 provides a summary of relevant nature conservation designations within the search areas. Appendix 10 illustrates these. No local, national or international level statutory designations were returned for the search areas. Three non-statutory designations at a local level exist.

Site Name/Ref	Designation	Designation Feature	Size	Proximity to Site
Shortwood and Hay Green/637	LWS	Ancient woodland, typified by English oak, bracken and bluebell with other areas of silver birch, goat willow and sycamore. Himalayan balsam also occurs. Three ponds, water courses and neutral grasslands occur. Range of S41 birds and nationally/locally notable plants	15.54ha	25m north

Site Name/Ref	Designation	Designation Feature	Size	Proximity to Site
Barrow Colliery Site –/1158	LWS	Reclaimed colliery with ancient woodland, hedgerows; semi-improved neutral grassland; tall ruderal herbs, dense scrub water courses, marshy grassland and bare ground and heath habitats, Japanese knotweed and Himalayan balsam. Several locally unusual butterfly species; range of S41 birds nationally/locally notable plants	101.29ha	700m north-east
Dearne Valley Green Heart	NIA	To restore and enhance ecological networks of the River Dearne, its floodplain and links to surrounding habitats. Reedbeds, wet and dry grassland, woodlands and reclaimed industrial areas and farmland created or enhanced.	16,000ha	Wholly within and in the south western extent of the NIA

Table 7.6 Designated Sites within zones of Influence

- 7.44 The Local wildlife sites are acknowledged as being of **County Significance**.
- 7.45 The nature improvement area is not in itself a single assessable site, but instead contains a range of project areas focused on restoring and enhancing the ecological networks of the river, its floodplain, and links to habitats on surrounding slopes and hills.
- 7.46 Table 7.7 provides a summary of the notable species recorded within the search area.

Species	Most recent record	Closest record	Records (Since 2009)	Status
Amphibians				
Common frog <i>Rana temporaria</i>	2015	On Site	16	WCA, Priority
Common toad <i>Bufo bufo</i>	2015	On Site	17	NERC, WCA, Priority
Great crested newt <i>Triturus cristatus</i>	2014	On Site	5	NERC, WCA, Priority
Smooth newt <i>Lissotriton vulgaris</i>	2015	On Site	12	WCA, Priority
Bats				
Brown long-eared <i>Plecotus auritus</i>	2009	942m SW	1	ECCD, NERC, WCA, Priority
Common pipistrelle <i>Pipistrellus pipistrellus</i>	2017	380m NE	2	ECCD, WCA, Priority
Leisler's <i>Nyctalus leisleri</i>	2014	680m NW	1	ECCD, WCA, Priority
Pipistrelle sp <i>Pipistrellus</i>	2016	370m S	2	ECCD, NERC, WCA, Priority

Species	Most recent record	Closest record	Records (Since 2009)	Status
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	2012	720m NW	1	ECCD, NERC, WCA, Priority
Unknow bat sp. <i>Vespertilionidae</i>	2012	620m NW	2	ECCD, NERC, WCA, Priority
Whiskered <i>Myotis mystacinus</i>	2016	942m SW	1	ECCD, WCA, Priority
Birds				
Barn Owl <i>Tyto alba</i>	2011	950m E	1	Schedule 1, Priority
Bullfinch <i>Pyrrhula pyrrhula</i>	2018	95m N	6	NERC, Schedule 3, BOCC 4 (Amber), Priority
Dunnock <i>Prunella modularis</i>	2009	580m E	16	NERC, BOCC 4 (Amber), Priority
Fieldfare <i>Turdus pilaris</i>	2009	500m W	2	Schedule 1&4, BOCC 4 (Red)
Garganey <i>Anas querquedula</i>	2017	194m N	2	Schedule 1, BOCC 4 (Amber)
Golden Plover <i>Pluvialis apricaria</i>	2013	838m N	8	Schedule 2(1) &3(1)
Goshawk <i>Accipiter gentilis</i>	2015	975m NE	1	Schedule 1&4
Green Sandpiper <i>Tringa ochropus</i>	2012	896m N	1	Schedule 1, BOCC 4 (Amber)
Grey Partridge <i>Perdix perdix</i>	2015	892m N	4	NERC, BOCC 4 (Red), Priority
House Sparrow <i>Passer domesticus</i>	2015	254m NE	31	NERC, BOCC 4 (Red), Priority
Kestrel <i>Falco tinnunculus</i>	2016	On Site	7	Schedule 4, BOCC 4 (Amber)
Lapwing <i>Vanellus vanellus</i>	2016	866m N	8	NERC, BOCC 4 (Red), Priority
Lesser Redpoll <i>Acanthis cabaret</i>	2016	60m N	1	NERC, BOCC 4 (Red), Priority
Mallard <i>Anas platyrhynchos</i>	2015	190m NW	1	Schedule 2(1) &3(3), BOCC 4 (Amber)
Redwing <i>Turdus iliacus</i>	2009	577m W	2	Schedule 1&4, BOCC 4 (Red)
Reed Bunting <i>Emberiza schoeniclus</i>	2017	On Site	6	NERC, BOCC 4 (Amber), Priority
Ringed Plover <i>Charadrius hiaticula</i>	2010	112m N	4	BOCC 4 (Red), Priority
Skylark <i>Alauda arvensis</i>	2018	214m N	7	NERC, BOCC 4 (Red), Priority
Song Thrush <i>Turdus philomelos</i>	2016	615m S	5	NERC, Schedule 3(1), BOCC 4 (Red), Priority

Species	Most recent record	Closest record	Records (Since 2009)	Status
Starling <i>Sturnus vulgaris</i>	2009	256m S	16	NERC, BOCC 4 (Red), Priority
Stock Dove <i>Columba oenas</i>	2016	1000m NE	1	BOCC 4 (Amber)
Swift <i>Apus apus</i>	2018	697m S	5	BOCC 4 (Amber)
Tawny Owl <i>Strix aluco</i>	2015	967m NE	1	BOCC 4 (Amber)
Teal <i>Anas crecca</i>	2013	970m NE	2	Schedule 2(1)&3(3), BOCC 4 (Amber)
Willow Tit <i>Poecile montana</i>	2015	166m N	5	NERC, BOCC 4 (Red), Priority
Willow Warbler <i>Phylloscopus trochilus</i>	2018	60m N	3	BOCC 4 (Amber), Priority
Yellowhammer <i>Emberiza citrinella</i>	2017	260m N	1	NERC, BOCC 4 (Red)
Invertebrates				
Dingy Skipper <i>Erynnis tages</i>	2016	On Site	4	NERC, RedList (Vulnerable), Priority
Small Heath <i>Coenonympha pamphilus</i>	2016	150m N	6	NERC, RedList (Near Threatened)
Cinnabar <i>Tyria jacobaeae</i>	2014	90m W	1	NERC
Other Mammals				
Badger <i>Meles meles</i>	2016		2	PBA, WCA
West European Hedgehog <i>Erinaceus europaeus</i>	2016	917m N	3	NERC, WCA, Priority

Table 7.7 Protected and Notable Species Records¹⁸**Field Study**

- 7.47 Locations of habitats and target notes are illustrated on Figure 7.2. Table 7.8 p69 describes the intrinsic nature conservation value of habitats recorded within the Site. Full descriptions of all habitats identified within the site and immediate surrounds is provided in Appendix 10.

¹⁸ **Key to Conservation Status:** WCA – Wildlife & Countryside Act 1981 (as amended), SCH1/2/3 – Birds listed on Schedule 1/2/3 of the Wildlife & Countryside Act 1981 (as amended), NERC- Natural Environment and Rural Communities Act (Section 41), ECCD- European Communities Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora (Annexe 4), Red List- IUCN Red List 2001, Local Priority – Barnsley Biodiversity Action Plan 2009, BOCC – Birds of Conservation Concern 4 (red/amber)

Habitat Type (JNCC, 2010)	Description	Valuation
Semi-natural Broadleaved Woodland	A small belt of semi-natural broadleaved woodland was noted at the northern extent of the site. Silver birch <i>Betula pendula</i> dominated the canopy and elder <i>Sambucus nigra</i> and hawthorn <i>Crataegus monogyna</i> were occasional in the shrub layer.	Below Local – Local Priority Habitats (Lowland mixed deciduous woodland). Contribute towards the local ecological network.
Broadleaved Plantation Woodland	This habitat was noted in compartments throughout the site bordering grassland compartments. It comprised dense plantings of native trees and shrubs with a c.5-10m high canopy casting a dense shade. A mix of native broadleaved trees was noted with abundant silver birch, common alder <i>Alnus glutinosa</i> , and grey alder <i>A. incana</i> characterising most areas. In 2017, common spotted-orchid <i>Dactylorhiza fuchsii</i> were noted within one of the woodland blocks.	Below Local – Of limited intrinsic value but provide woodland cover locally and increase habitat connectivity across the site.
Dense / Continuous and Scattered Scrub	Areas of scattered scrub were found at the periphery of plantation woodlands colonising areas which had previously been classified as semi-improved grassland. Frequent crack willow <i>Salix fragilis</i> , silver birch, and white poplar <i>Populus alba</i> were the most common woody species recorded. The underlying grassland vegetation appeared unmanaged with a dense sward. Denser areas of broadleaved scrub were recorded along the A6195.	Below Local – Restricted diversity of the habitat and relatively limited extent of habitat within the site.
Semi-Improved Grassland	The area along the western boundary adjacent to pond P1 was previously recorded as an area of semi-improved grassland supporting greater species diversity and interest and a Phase II Botany Survey was undertaken on 30th August 2017 (FPCR) on this grassland to ascertain whether it met the LWS criteria at this time. Results indicated that it did not support enough species diversity to meet LWS selection criteria. Currently much of this area has scrubbed over as successional vegetation has established through lack of management.	Local – Local Priority Habitats. Current value is restricted due to poor condition of the habitat and limited extent of habitat within the site
'Poor' Semi-improved Grassland	The northern field compartments appeared to have been left unmanaged for several years. A poor-semi improved grassland has developed across what was previously arable land. Abundant Italian rye grass <i>Lolium multiflorum</i> and rough meadow grass <i>Poa trivialis</i> characterised the sward. Other species included frequent common hogweed <i>Heracleum sphondylium</i> , common nettle <i>Urtica dioica</i> and creeping thistle <i>Cirsium arvense</i> with patches of locally abundant bramble <i>Rubus fruticosus</i> agg. and locally frequent common mouse ear <i>Cerastium fontanum</i> .	Negligible – Ubiquitous habitat, comprising common and widespread species.

Habitat Type (JNCC, 2010)	Description	Valuation
Improved Grassland	Five compartments of intensively managed improved pasture were recorded in the south of the site. Perennial rye-grass <i>Lolium perenne</i> dominated and both white clover <i>Trifolium repens</i> and creeping buttercup <i>Ranunculus repens</i> were frequent. These fields were utilised for grazing cattle at the time of survey.	Negligible – Ubiquitous habitat, comprising common and widespread species.
Open Water	A eutrophic attenuation pond (P1) was recorded at the site boundary (the vast majority outside the site). The margins were dominated by common bulrush <i>Typha latifolia</i> . Other flora noted included abundant soft rush <i>Juncus effuses</i> , locally abundant water mint <i>Mentha citrata</i> and frequent gypsywort <i>Lycopus europaeus</i> . The connecting drainage channel (D1) included a depression at the culvert head near the southern end of the site which has been previously referred to as P1a.	Local – Local Priority Habitat. Value restricted by minor extent of habitat within the site
Hedgerows	Twelve native hedgerows were recorded within the site, all appeared to have been planted within the past thirty years, and as such do not qualify under 1997 Hedgerow Regulations. None supported standard trees though most had good connectivity to plantation woodland and supported a moderate number of native canopy species. The majority of lengths were therefore assessed as being of moderate to high value under the Hedgerow Evaluation and Grading System (HEGS) (scoring -2 to 2+).	Local – (collectively all of the native hedgerows within the site). Local Priority Habitat. Of value to local wildlife, providing foraging nesting and resting habitat and routes of movement through the site.
Running Water	A steep sided wet ditch (D1) was noted flowing south to north close to the western site boundary from a culvert head in the south.	Local – Provides connectivity with pond P1.
Other Habitats	A spoil mound with a loose rocky substrate is located on the western extent of the northern field compartments. A range of early coloniser species were present. These included frequent bristly ox-tongue <i>Helminthotheca echioides</i> , broad-leaved dock <i>Rumex obtusifolius</i> , common ragwort <i>Jacobaea vulgaris</i> , mugwort <i>Artemisia vulgaris</i> , red clover <i>Trifolium pratense</i> and white clover.	Negligible – Comprises a small area with common and widespread species. Limited value from increased on-site habitat diversity.

Table 7.8 Habitat types recorded within the site

- 7.48 The Phase I Survey identified three areas containing of Japanese Rose *Rosa rugosa*, which is listed under Schedule 9 Part 2 of the Wildlife and Countryside Act 1981 (amended) as a non-native invasive species, was recorded in association with plantation woodland (see TN1 Figure 7.3).

Protected / Notable Fauna

- 7.49 Throughout the Extended Phase 1 Survey, consideration was given to the presence of protected species including, but not limited to, those protected under the Wildlife and Countryside Act 1981 (as amended), the Protection of Badgers Act 1992 and the Conservation of Habitats and Species Regulations 2017. Consideration was also given to the existence and

use of the site by other notable fauna such as Species of Principal Importance NERC (2006), or Red Data Book (RDB) species. Full details of faunal surveys are provided in the accompanying Appendix 10.

Amphibians

- 7.50 The full details of great crested newt (GCN) surveys are provided in Appendix 10. Surveys for GCN have been undertaken since 2013 when Applied Ecology Services undertook an initial survey. This was updated by FPCR in 2015. Two ponds were located within the site boundary and included a eutrophic attenuation pond measuring approximately 40mx10m (P1) and a pooled section of ditch at a culvert in the south of the site connected to pond P1 via a steep-sided wet ditch. A further four ponds that were suitably connected to the site were located within 500m of the site, which all included a range of attenuation features for nearby developments. The Habitat Suitability Index (HSI) surveys undertaken by FPCR in 2015 for each of these ponds are provided in Table 7.9 (below).

Pond	HSI Score	Predicted Presence	HIS Category
1	0.49	3%	Poor
1a		Dry	
2	0.79	79%	Good
3	0.69	55%	Average
4	0.76	79%	Good
5	0.79	79%	Good

Table 7.9: 2016 HSI Survey Results

- 7.51 Aquatic surveys were undertaken on pond P1-P5 in May and June 2015 during which no GCN were recorded. GCN nymphs were apparently recorded in pond P1 during surveys undertaken in 2013 however, none were identified during the updated surveys conducted by AES in 2014 nor by FPCR in 2015. A single GCN was also observed by AES in pond P2 during 2014 surveys however none were identified during the 2013 or 2015 surveys.
- 7.52 Environmental-DNA (eDNA) analysis was undertaken on water samples from two ponds approximately 500m north of the site, to the east of Birdwell in 2018, during which GCN were confirmed as absent. No records of GCN, aside from those recorded at P1/P2 were provided for within 500m of the site as part of the desk study, with one record at a pond over 500m south west from the site and with no connections to it. The population of GCN identified during the 2014 surveys undertaken by AES were considered to be relatively isolated and small with none found during updated surveys. The population of amphibians is therefore considered to be of no more than **Local Significance**.

Bats

- 7.53 The full details of the bat surveys are provided in Appendix 10. The site was assessed as being of 'low-medium' quality in relation to value for bat committing and foraging (following BCT's assessment methodology) comprising predominantly open pasture with areas of immature plantation woodland and two small water bodies. Connectivity throughout the site was generally considered to be poor due to lighting within the wider landscape and the presence of the A6195 that bisected the site. No trees were present on site that offered any roosting potential for bats due to their relatively young age and good conditions.
- 7.54 Monitoring of foraging and commuting activity during 2015 transect and static detector surveys identified a number of bat species within the Site. These included common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula*, an unidentified pipistrelle, an unidentified *Nyctalus* species and an unidentified *Myotis* species.

During the transect surveys, the majority of bat contacts were made in the southernmost cattle grazed area of the site, however the overall numbers recorded were so low as to render the 'peak' areas of activity largely academic. The part of the site north of the A6195 presented very little bat activity. The findings of the static surveys broadly supported the transect survey findings with the overall level of activity being low, however the peak of activity was recorded within the central part of the site. During both surveys types, the vast majority of registration pertained to common pipistrelle contacts.

- 7.55 An update survey effort was also undertaken in September 2019 (detailed in addendum to Appendix 10) which comprised a single transect and two static detector surveys and found comparable results to earlier surveys, with species diversity and activity levels recorded remaining broadly similar to previous years.
- 7.56 The importance of the site for the local bat population was therefore considered to be of no more than **Local Significance**.

Birds

- 7.57 A total of 32 bird species were recorded during breeding bird surveys undertaken in 2015 and included a range of common and widespread generalist species such as magpie *Pica pica*, blackbird *Turdus merula*, robin *Erithacus rubecula* and a range of tit species in addition to the notable species discussed below. A small number of farmland birds were also recorded including yellowhammer *Emberiza citrinella* and skylark *Alauda arvensis* however these were recorded in very low numbers and onsite habitats were generally considered to be of limited suitability for notable populations of these species. Full details of the breeding bird survey results are present in Appendix 10.
- 7.58 The site was predominated by open pasture that supported limited breeding opportunities to the recorded assemblage. Plantation woodland and hedgerow/scrub habitats offered a range of opportunities to the generalist assemblage recorded that also incorporated a number of notable species including willow warbler *Phyllocopus trochilus*, bullfinch *Pyrrhula pyrrhula* and dunnock *Prunella modularis*. Wetland habitat was limited onsite but pond P1 attracted small numbers of reed bunting *Emberiza schoeniclus* and mallard *Anas platyrhynchos*. Where the site boundary was close to residential environs in the south of the site, habitats also provided some foraging for house sparrow *Passer domesticus* breeding within suitable offsite habitat.
- 7.59 Table 7.10 details the notable species recorded on Site, which appear on at least one of the following lists, and their recent status within Yorkshire:
- Schedule 1 of the Wildlife & Countryside Act 1981 (as amended);
 - Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006); and,
 - Birds of Conservation Concern Red or Amber lists.

Species	Conservation Status	Peak Count / Survey Occasions Recorded	Breeding Status	Recent Status within Yorkshire
Black-headed Gull	Amber List	1/1	Non-breeder	Common breeder and abundant in winter
Bulfinch	Amber List NERC ACT (S41)	5/2	Breeding	Uncommon breeder; scarce passage migrant / winter visitor

Species	Conservation Status	Peak Count / Survey Occasions Recorded	Breeding Status	Recent Status within Yorkshire
Dunnoch	Amber List NERC ACT (S41)	3/3	Probable-breeder	Abundant resident; passage migrant
House sparrow	Red List NERC ACT (S41)	1 colony/2	Non-breeder	Abundant resident but has decreased
Kestrel	Amber List	1/1	Non-breeder	Fairly common resident and passage migrant
Mallard	Amber List	2/1	Confirmed Breeder	Fairly common breeder; common migrant and winter visitor
Reed bunting	Amber List NERC ACT (S41)	1/2	Probable-breeder	Fairly common breeding resident and passage migrant
Skylark	Red List NERC ACT (S41)	2/3	Probable-breeder	Common resident; passage migrant and winter visitor
Starling	Red List NERC ACT (S41)	40/3	Non-breeder	Abundant but decreasing resident, passage migrant and winter visitor
Willow warbler	Amber List	7/3	Probable-breeder	Common to abundant breeding summer visitor and passage migrant
Yellowhammer	Red List NERC ACT (S41)	1/1	Non-breeder	Fairly common resident and passage migrant

Table 7.10. Protected Species of Principal Importance, BoCC Red and Amber Listed Bird Species Recorded on site during Breeding Bird Surveys 2015 and their Recent Status within Yorkshire.

- 7.60 As the assemblage mostly comprised common and widespread species in numbers typical of the habitats present, the site was considered to be of no more than **Local Significance** for its bird assemblage.

Reptiles

- 7.61 The full details of reptile surveys are provided in Appendix 10. No reptiles were recorded during the surveys undertaken in 2015 and although the on-site habitats appear to have some limited suitability for reptiles (especially along ditches), it is likely that the isolation of the site by surrounding roads has prevented colonisation. The site is therefore considered to be of **Negligible Significance** for any local reptile populations.

Water Vole

- 7.62 The full details of otter/water vole are provided in Appendix 10. The wet ditch D1 and pond P1 present on Site were considered to provide potential breeding and/or foraging habitat for water vole. No evidence of this species was identified during surveys and the Site is therefore considered to be of **Negligible Significance** for and water vole.

Invertebrates

- 7.63 A collection of Lepidoptera records were returned from the data consultation including a record of dingy skipper from within the site. Due to the presence of common and widespread habitats

within the site, it is considered likely that invertebrate assemblages within the site reflect that of the wider area. A general lack of dinky skipper foodplant within the site is likely to prevent its continued presence. Consequently and as a result of the low botanical diversity and poor habitat quality the Site, it was considered to be of **Negligible Significance** for invertebrates.

Other Species

- 7.64 The Site was assessed for its suitability for other notable terrestrial mammals relevant to the lowland farmland nature of the Site, including Species of Principle Importance SPI's under the NERC 2006 including brown hare *Lepus europaeus* and hedgehog *Erinaceus europaeus*.
- 7.65 No evidence of badger was observed during any surveys between 2015 and 2019. Whilst the grassland and woodland habitats within the site offer suitable foraging habitat to badgers, based on the absence of field signs, the site does not form an important area of foraging for any local group which may be present in the wider area (the closest known record being at least 500m away). No impacts to any social group are therefore anticipated and the Site is assessed as being of Negligible Significance for Badger.
- 7.66 No records of brown hare were identified during the desk study and no brown hare were incidentally recorded during the Phase I or protected species surveys undertaken. Brown hare are a species that reside in open countryside and favour a mixed farmland landscape of arable crops, pasture and hay meadows with hedgerows and field margins, which provide all year cover and foraging resources. The Site may provide a degree of shelter and foraging habitat to the species as part of its more extensive annual range that can extend between 20 -190ha, but due to the limited suitability of habitats present the site was considered unlikely to provide a notable habitat resource. Based also on its small size, representing a small percentage of the species annual range and its sub-optimal nature, the Site is assessed as being of **Negligible Significance** for brown hare.
- 7.67 Hedgehogs are known to be present in the wider area. Hedgehogs occur within a wide variety of habitat types, including grasslands, suburban areas and especially woodlands, which typically offer greater nesting and foraging resources. The majority of the site comprises intensively grazed pasture with a scarcity of adequate ground cover and is therefore considered to be of limited value to the species, with more suitable habitat present within plantation woodland blocks and areas of hedgerows and scrub. Based on the extent of suitable habitat present and its isolated nature, which is also likely to be a limiting factor, the site is unlikely to be of particular importance for the species, although the species may occur in low numbers. Therefore, the site is assessed as being of **Negligible Significance** for this species.

Evaluation Summary

- 7.68 The evaluation of the ecological features identified during the baseline survey work is summarised in Table 7.11 below. For the purpose of this chapter, all features assigned Local level or higher value and / or afforded legislative protection were deemed to be Important Ecological Features and have been taken forward into the assessment of potential impacts as set out in the following section.

Ecological Features	Value
Shortwood and Hay Green LWS	County
Barrow Colliery Site LWS	County
Semi-natural Broadleaved Woodland	Local

Ecological Features	Value
Semi-Improved Grassland	Local
Open Water	Local
Hedgerows	Local
Running Water	Local
Amphibians	Local
Bats	Local
Birds	Local

Table 7.11 Summary of Important Features

Identification of Likely Effects

7.69 This section considers the potential impact from construction and operation of the proposed development.

- In the absence of mitigation or enhancement measures such as a green infrastructure (GI) strategy, potential moderate to substantial biodiversity and ecology effects arising from the proposals include:
- Degradation/disturbance to designated sites and other valued habitats resulting from light, noise, visual disturbance, air quality (dust deposition) and surface water runoff;
- Direct loss of habitats and associated flora and fauna within the site boundaries, interruption of wildlife corridors, decrease in value to wildlife through reduction in species and/or loss of habitat of notable wildlife value;
- Disruption, fragmentation or loss of existing habitats of notable ecological value (e.g. hedgerows);
- Construction phase or operational effects such as indirect or direct disturbance or direct mortality of protected and scarce species; adverse effects due to artificial lighting; water/air pollution and noise.

Construction Impacts

Locally Designated Sites

7.70 Shortwood and Hay Green LWS is located in proximity (50m) to the north-eastern site boundary and in the absence of mitigation there is the potential for construction activities to affect the LWS, including noise, dust deposition and risk of contaminants entering the site from the construction areas. If severe such impacts if could result in changes to the composition of the woodland ground flora and / or death of shrub and canopy species. Given the extent of the wood and its position relative to the proposals, such impacts would be localised to its south-western edge and be unlikely to the affect the wider extent of ancient woodland and subsequently the integrity of its LWS designation.

7.71 Barrow Colliery Site LWS is unlikely to be affected by dust disposition or noise generated during the construction phase due to its distance (700m) from the site.

Habitat Loss

- 7.72 It is understood that the site development will involve the following habitat losses:
- loss of poor semi-improved (3.95ha) and improved grassland habitats (16.58ha)
 - loss of dense (0.43ha) and scattered scrub (0.42ha)
 - loss of bare ground (0.76ha) and areas of hardstanding (0.72ha)
 - loss of a plantation woodland (14.22ha)
 - Loss of two mature English oak (T62 considered unsuitable for retention and T14), a mature hybrid black poplar (T15) and a semi-mature common lime (T32) (see Figure 6186-T-01, Appendix 10 for tree references).
 - Loss of approximately 2.08km of hedgerow.
- 7.73 Pond P1, hedgerows H3 and H13, and the semi-natural broadleaved woodland will be retained within the proposed scheme. The south western area of scattered scrub and plantation woodland that lies beyond the footpath will be retained, with the area around pond P1 managed to restore the grassland habitat previously recorded.

Habitat Disturbance

- 7.74 Construction operations have the potential to lead to disturbance effects on both the retained and adjacent semi-natural habitats. This may take the form of either:
- Physical damage to vegetation & soil compaction;
 - Accidental pollution; or
 - Dust deposition.

Effect on Fauna through Habitat Loss and Disturbance

Amphibian

- 7.75 Pond P1 and the immediate surrounding habitats are being retained however there is a risk of dust deposition and contaminants entering the site from the construction areas. The adjacent terrestrial habitat (predominantly plantation woodland) is to be lost to the proposals.
- 7.76 Offsite pond P2 and the immediate surrounding habitats are being retained however there is a risk of dust deposition and contaminants entering the site from the construction areas. The adjacent terrestrial habitats (predominantly bare ground and poor semi-improved grassland) are to be lost to the proposals.
- 7.77 The loss of suitable on site GCN terrestrial habitat is considered likely to affect the conservation status of any GCN population present (any GCN population present is considered likely to be low)
- 7.78 In the absence of mitigation there is a risk that the activities associated with construction could lead to the accidental killing or injury of GCN. Mortality is considered likely to adversely impact on the local conservation status of GCN should they remain in the local area.

Bats

7.78.1 The majority of habitats of foraging and commuting value to bats within the site, including the hedgerow will be lost within the scheme. Levels of activity recorded in association with the hedgerows (and within the site generally) were low suggesting that they are not used as a significant foraging resource within the local area. Furthermore, whilst bats will utilise hedgerows (and other linear features) for foraging and commuting, they do not rely solely upon them to commute and will readily cross open habitats.

7.78.2 The use of high intensity lighting during the construction phase of works could impact on bats, particularly where it is close to retained and boundary habitats such as hedgerows H3 and H13 and Shortwood. While this is unlikely to significantly affect the viability of any local population, it could lead to their displacement from some areas or decline in foraging efficiency during construction phase.

Birds

7.79 Proposals will result in loss of breeding / foraging habitat for a small number of species noted as being of conservation concern. A summary of potential effects is provided in Table 7.12 below.

Species	Status	Effect of Habitat Loss
Bulfinch	S.41, Amber	Loss of hedgerows and areas of denser vegetation will result in the loss of suitable foraging and breeding habitat to the species.
Dunnoek	S.41, Amber	Loss of hedgerows and areas of denser vegetation will result in the loss of suitable foraging and breeding habitat to the species.
House sparrow	S.41, Red	Loss of potential foraging habitat in the form of hedgerows and areas of denser vegetation.
Kestrel	Amber	Loss of potential foraging habitat in the form of open grassland areas.
Mallard	Amber	Negligible
Reed bunting	S.41, Amber	Loss of hedgerows and areas of denser vegetation will result in the loss of suitable foraging and breeding habitat to the species.
Skylark	S.41, Red	Loss of open grassland field which provides nesting and foraging opportunities will result in loss of species from site.
Starling	S.41, Red	Loss of potential foraging habitat in the form of open grassland areas.
Willow warbler	Amber	Loss of hedgerows and areas of denser vegetation will result in the loss of suitable foraging and breeding habitat to the species.
Yellowhammer	S.41, Red	Loss of hedgerows and areas of denser vegetation will result in the loss of suitable foraging and breeding habitat to the species.

Table 7.12: Potential Impacts of Habitat Loss on Birds of Conservation Concern

7.80 All species could be considered as reasonably widespread within the wider countryside and the effect of habitat loss unlikely to be significant for any local population.

- 7.81 Unmitigated disturbance of breeding birds during construction may result from the accidental destruction of nests and the noise associated with vegetation clearance, initial ground works and construction activities that are of low frequency but high amplitude, such as piling. During the breeding season, such disturbance may lead to reduced breeding success through nest desertion or the avoidance of otherwise suitable habitat.

Reptiles

- 7.82 Proposals will result in the loss of limited areas of suitable habitats. No reptile populations have been recorded on Site and so any impact from construction activities are considered to be negligible.

Water Vole

- 7.83 No water vole populations have been recorded on or near the site and so any impact from construction activities are considered to be negligible.

Invertebrates

- 7.84 Proposals will result in the loss of limited areas of suitable habitats for identified on-site invertebrates (poor semi-improved grassland).

Other species

- 7.85 Suitable commuting foraging habitat for other species such as badger, hare and hedgehog will be lost as a result of proposals (hedgerows, plantation woodland and grassland areas). No evidence of these species have been recorded on site and so any impact from construction activities are considered to be negligible.
- 7.86 Construction operations are likely to result in long-term adverse effects on features of below local ecological value via direct mortality or alteration of species and structural diversity of vegetation.

Operational Impacts

Locally Designated Sites

- 7.87 No operational impacts are anticipated to Shortwood and Hay Green LWS or Barrow Colliery Site LWS. The development has limited connectivity to the two LWS via an existing footpath which may experience a limited increase in use through commuting pedestrians and cyclists.
- 7.88 Any increase in recreational pressures on the two LWS is considered to be Negligible given the industrial nature of the development.

Habitats

- 7.89 Following construction, the retained vegetation, including pond P1, the woodland, and hedgerows, may be adversely impacted by the inevitable increase of human presence and any associated recreational activities, including cycling and dog walking. This would most likely take the form of actual physical damage to vegetation, the compaction of soils as a result of trampling pressure and/or localised nutrient enrichment from dog fouling. Without mitigation it is expected that these effects would be associated with regularly used footpaths or desire lines, and therefore highly localised. Given the industrial nature of the development, adverse impact of a post-construction increase in visitor pressure upon these features is considered negligible.

Fauna

General

- 7.90 Proposals have the potential to result in some disturbance effects to wildlife using the habitats within and adjacent to site through increased human activity, vehicular movements and noise levels. Species most likely to be affected by disturbance are day-active birds and mammals, however no particularly sensitive species have been recorded within the site, and studies (Hockin et al, 1992) have shown that animals generally habituate to regularly-occurring disturbance or predictable events. Any disturbance impacts to fauna would be negligible.

Amphibians

- 7.91 Without mitigation the increased vehicular activity associated with operation of the proposed development and the provision of features, such as raised kerbs and drainage gully pots, have the potential to increase the incidence of GCN mortality, i.e. as individuals become trapped in the gullies (English Nature 2001). This would have the potential to impact upon any GCN populations supported by pond P2. Without mitigation this has the potential to adversely affect the integrity of the GCN newt population through a reduction of the adult numbers, which would result in an impact Below Local significance (Minor Adverse).

Bats

- 7.92 The unmitigated lighting of the retained boundary habitats and habitats within the GI, may indirectly affect, some species of bat which are known to avoid illuminated areas. This avoidance may result in reduced foraging success and survival rates.
- 7.93 Common pipistrelle, the most frequently encountered species during the surveys, in addition to soprano pipistrelle also recorded are adaptable species relatively tolerant of artificial lighting. The local conservation status of these species is therefore unlikely to be adversely affected by increased lighting levels. Myotis species recorded at low levels during the surveys and less tolerant of artificial lighting are, in the absence of mitigation, likely to be subject to the above impacts.

Birds

- 7.94 Birds in general are considered likely to be affected by an increase in use of the area by humans,. However it is considered that the birds regularly using the site and its surroundings are likely to be habituated to some of the associated effects of development, such as noise with from the A6195 present adjacent to the site. Therefore the impacts are unlikely to be significant.

Reptiles

- 7.95 No reptiles have been recorded on or near the site and so any impact from operational activities are considered to be negligible.

Water Vole

- 7.96 No water vole populations have been recorded on or near the site and so any impact from operational activities are considered to be negligible.

Invertebrates

- 7.97 Impacts from operational activities are considered to be of negligible with regards invertebrates.

Badgers

- 7.98 Badgers are well known to occur in urban settings, where there is often an abundance of foraging resources (Davidson et al 2009¹⁹). In some instances, there is also evidence that badger setts in urban locations are less likely to be disturbed (Jenkinson & Wheeler 1998²⁰). In this context it is considered that the increased human presence associated with urbanisation is likely to result in a Negligible impact upon any local badger population.
- 7.99 Badgers are at risk from mortality from accidental collisions with vehicles. Traffic volume is expected to increase as a result of the development. However, on-site site traffic speeds will be limited and the creation of a new roundabout the bypass is expected slow traffic in proximity to the site. As a result, the increase in traffic is likely to result in a negligible impact upon any local badger population.

Significance of Identified Effects

- 7.100 The significance of an impact is a matter of professional judgement but can be described in general terms as being a product of the ecological or nature conservation value of a site / habitat / community / species (the receptor) and the magnitude of the predicted impact. As a general rule, the more ecologically valuable a site and the greater the magnitude of the impact, the higher the significance of impact is likely to be.

Ecological Features	Confidence	Effects	Magnitude
Shortwood and Hay Green LWS	Unlikely	Temporary short-term negative impact on limited extent of feature.	Minor
Barrow Colliery Site LWS	Extremely unlikely	Negligible	Negligible
Semi-natural Broadleaved Woodland	Probable	Permanent loss and indirect negative impact on retained vegetation	Major
Semi-Improved Grassland	Probable	Permanent loss	Major
Open Water	Unlikely	Temporary short term indirect negative impact on feature	Minor
Hedgerows	Certain	Permanent negative direct and indirect impacts.	Major
Running Water	Unlikely	Temporary short term indirect negative impact on retained vegetation	Minor
Amphibians	Probable	Permanent negative direct and limited temporary short-term indirect impacts.	Moderate
Bats	Certain	Permanent negative direct and limited temporary	Minor

¹⁹ Davison, J, M. Huck, R. J. Delahay & T. J. Roper (2008) *Urban badger setts: characteristics, patterns of use and management implications* Journal of Zoology 275 (2008) pp190-200

²⁰ Jenkinson, S & C. P. Wheeler (1998) *The influence of public access and sett visibility on badger (Meles meles) sett disturbance and persistence* Journal of Zoology 246 pp443-486

Ecological Features	Confidence	Effects	Magnitude
		short-term indirect impacts	
Birds	Certain	Permanent negative direct and limited temporary short-term indirect impacts	Minor

Table 7.13 Summary of Identified effects

Cumulative Impacts

- 7.101 Projects coming forward within the Hoyland North Masterplan which potentially could contribute to a cumulative effect on the local biodiversity and wildlife resource in combination with this project include the following:
- ES14 (8.71ha) Employment Site;
 - HS64 (19.25ha) 615 residential dwellings
 - HS56 (6.39ha) 80 residential dwellings
 - HS66 (2.6ha) 70 residential dwellings
- 7.102 Of these projects coming forward or potentially coming forward only HS64 has been subject to detailed ecological survey. Importantly this site lies to the immediate south of the application site. This survey information, produced in support of an outline planning application (ref 2016/1531) indicates that there is '*no conclusive evidence of protected species regularly occurring on the development site*'. Furthermore, vegetation is identified as having low ecological significance.
- 7.103 While not directly associated with the employment allocation ES14, this area has been subject to detailed ecological survey work in association with the A61 Birdwell Junction Improvement (ref 2014/1516). No particularly valuable habitats, protected species or significant adverse impacts were identified as part of this submission

Cumulative Impacts to Non-statutory Sites of Nature Conservation Interest

- 7.104 Due to the low level of impact resulting from the application site it is considered that there will be no cumulative impacts with other schemes upon any non-statutory sites of nature conservation interest during the demolition and construction phase.

Cumulative Impacts to Habitats

- 7.105 A number of the above potential developments may involve the loss of habitats that are of a similar type to those within the Site, including hedgerows, trees, and open fields. However, no particularly important or sensitive habitats have been identified either within the site or in association with other committed sites and, while the site increases the cumulative area of habitats lost and the risk of disrupting connectivity, given the limited interest associated with on-site habitats and those associated with other projects the impacts remain at a local level of significance at most.

Cumulative Impacts to Fauna

- 7.106 Each development, including the site itself, will result in the unavoidable displacement of mobile species, including breeding birds and foraging/commuting bats. However, no particularly sensitive species have been identified and given the relatively disturbed and urbanised nature of the surrounding area important assemblages are unlikely. On this basis, cumulative impacts to fauna are likely to be of significance at a local level at most.

Mitigation and Monitoring Measures

- 7.107 From the outset and following review of the ecological baseline the potential effects arising as a result of the Proposed Development have been reviewed in order that, where possible, potential impacts can be avoided through an alteration in design, layout or working methods.

General Construction Site Impact Avoidance Measures

- 7.108 The potential for impacts on retained habitats outside of the immediate working areas during construction activities would be minimised by retaining and protecting unaffected and/or boundary habitats within the site to ensure that disturbance is kept to a minimum and any sensitive species are retained in situ. This would primarily be achieved through the erection of protective fencing around the retained habitats during construction using best practice methods.
- 7.109 No temporary storage of materials, construction of haul routes, or site machinery would be situated within retained habitats. Access by construction site personnel would be restricted to proposed roads off of Dearne Valley Parkway.
- 7.110 The relevant Guidelines for Pollution Prevention (GPP) listed below will be adhered to, to ensure construction works are undertaken in an environmentally responsible manner. Any environmentally hazardous material used will be kept in dedicated stores and storage tanks will have appropriate bunding. All construction activities will be undertaken in accordance with a Construction Environmental Management Plan (CEMP).
- GPP5: Works and maintenance in or near water for construction or maintenance works near, in or over water;
 - GPP8: Safe storage and disposal of used oils
 - GPP13: Vehicle washing and cleaning
 - GPP19: Vehicles: Servicing and repairs
 - GPP21: Pollution Incident Response Plans

Mitigation for Non-statutory Sites of Nature Conservation Interest and retained habitats

- 7.111 Direct external lighting would be avoided on all retained habitats and road lighting would be of the low- or high-pressure sodium type instead of mercury or metal halide lamps. All lighting would be directional to avoid light spillage onto sensitive habitats (including Shortwood and Hay Green LWS). Lighting levels would be as low as possible and only used where necessary.
- 7.112 Drainage proposals will be designed to ensure that Ponds P1 and P2 are only connected to the site drainage scheme during periods of high rainfall to reduce the levels of pollutants that will

be introduced into these existing features. The ponds will be monitored annually for the presence of pollutants with recommendations for treatment provided as required in accordance with any approved discharge consents.

- 7.113 All construction access should avoid areas of retained habitats, specifically works on the attenuation basin in the west of the site should proceed from the east with no access through the retained area around pond P1.

Compensation for Habitat Losses

- 7.114 The development will largely result in the loss of immature plantation woodland, improved and semi-improved grassland habitats, which are of local significance at most. The loss of hedgerows also carry an ecological impact of local significance both in terms of the loss of habitat, and in reducing the functional connectivity across the site.
- 7.115 Green infrastructure proposals have been designed to compensate for habitat loss, incorporate areas of existing nature conservation value and create new complimentary habitat, notably new hedgerows, woodland, scattered scrub habitats and new wetland areas, which incorporate reedbeds.
- 7.116 The current site proposals will therefore offset any biodiversity loss across the site and ensure that the ecological functionality of the site is not only maintained, but also enhanced through creation of high value habitats with improved management.
- 7.117 As indicated above, this will be achieved through habitat creation which will focus on compensating for lost habitats and providing habitat for protected/notable species currently using the site or thought most likely to colonise it in future. Habitat creation and enhancement opportunities present within the GI framework are driven by a number of factors influencing the site including:
- Protecting surrounding habitats
 - Control of invasive species
 - A requirement to compensate for loss of habitats and ensure that there is no net loss in biodiversity value arising as a result of the development;
 - A desire to benefit the Barnsley Biodiversity Action Plan targets
 - The maintenance of habitat corridors through the site and incorporation of habitat links to surrounding habitats, and;
 - The protection of existing features of interest that would benefit through sympathetic management and greater connectivity through integration into a wider mosaic of habitats linking beyond the site.
- 7.118 The proposals include the provision of an extensive GI Framework totalling approximately 37 hectares. The GI proposals can be roughly divided into the following elements:
- the retention of pond P1 and surrounding habitat, as well as hedgerows H3 and H13.
 - the enhancement of former grassland habitat surrounding pond P1.

- the implementation of new structural planting comprising a significant number of standard trees and scrub planting to provide a valuable habitat for a range of species.
- boundary planting to reinforce and protect adjoining habitats as well as ensuring habitat connectivity around the site;
- a sustainable drainage strategy which also contributes to nature conservation interest.

Habitat Enhancement – Existing Habitats

Grassland

- 7.119 The area of former grassland surrounding pond P1 which has now scrubbed over is a priority for restoration efforts. The successional scrub vegetation will be removed and the area will be put under targeted management to promote floristic diversity and maintain an open sward, preventing further encroachment onto species-rich areas.
- 7.120 In order to create suitable conditions for wildlife and ensure that the grassland sward is of varied structure cutting would be undertaken on a rotational basis, with only a half of the grassland cut in any one year. This would reduce scrub encroachment but ensure that areas of dense tussocky grassland are present in addition to shorter areas that can be utilised by a range of invertebrates.
- 7.121 Grassland will be cut once annually using hand held strimmer's or by mowing and would be completed late in the season (late August to September). All arisings would be collected and deposited within a designated area away from the water course. The grass sward will be monitored annually (or as agreed with the LPA); if species diversity does not appear to be increasing, a second cut will be specified in the spring (April). This management will focus on promoting a tussocky structure which will be of benefit amphibians and other local wildlife.

Habitat Creation

Wetlands

- 7.122 The primary function of the surface water drainage system will be to control flows and reduce the potential for pollution of the aquatic environment. However, it is important that SUDS are considered holistically and that each element is recognised as part of a network of habitats and wildlife corridors.
- 7.123 Two new waterbodies are to be created as part of the development. It is the intention to provide a varied wetland resource including ponds, swales and ditches as part of the SUDS.
- 7.124 Open water areas would be shaped to provide a range of bank angles and heights and planted with common reed. Gradients will vary from 15° - 25° from horizontal and will be enhanced by the excavation of small embayments. This will create differing conditions of light and temperature and will thus maximise and encourage the diversification of the flora and associated fauna. Water depth will ideally range from 50mm to 2000mm, ensuring that both warm shallows for the developing larvae of aquatic invertebrates and amphibia are created and that an area of unfrozen water is retained throughout the year. The shallowest areas will grade into an expanse of seasonally wet mud that may attract a further variety of invertebrates and plants, which will, in turn, attract other fauna including birds and small mammals.

Woodland and scrub

- 7.125 Extending around the site's perimeter and the various built development plots would be a framework of landscape corridors and open spaces. New woodland and woodland edge/scrub planting around much of the site's perimeter would connect to that already existing immediately beyond, providing increased connectivity for species reliant primarily on native species. The implementation of internal woodland and scrub corridors would take advantage of links with the existing surrounding woodland to aid the colonisation and dispersal of woodland species.
- 7.126 All woodland and woodland edge planting will be of native provenance and reflect the composition of semi-natural woodland locally. Following initial establishment, woodland blocks will be monitored and managed to ensure it develops a varied structure over time, with associated scrub and canopy layers. This will include the selective thinning of poorer quality species during establishment.

Hedgerows

- 7.127 New hedgerows and scrub habitat would be created on the site's periphery, which provide a habitat corridor around the site. Existing hedgerows where retained would be maintained and enhanced as they provide sheltered corridors for wildlife to move along; encouraging dispersal around the site. Hedgerows should be managed to promote a thick diverse structure to provide valuable habitats and corridors of movement.

Habitat Management

- 7.128 A Landscape and Ecological Management plan has been produced to provide detailed specifications for the creation of the new habitats described above and the management of all retained and created habitats to promote their biodiversity value in the long-term. The management plan also includes a comprehensive work scheduling detailing the timings of all works required (see Appendix 11).

Mitigation for the Disturbance to Fauna

Amphibians

- 7.129 Assuming that GCN remain close to the site and order to allow derogation from the relevant legislation and for works to occur, a European Protected Species Licence (EPSL) may be required. This would be informed by an updated survey of GCN population status for ponds within 500m of the site boundary.
- 7.130 Should a population of GCN be confirmed, then a method statement will be provided to Natural England as part of a licence application demonstrating that the FCS of the local GCN population will be maintained (or potentially enhanced as more suitable habitat is to be provided) following development. This strategy will include measures to ensure that no newts are harmed during construction and detail the provision of areas of suitable habitat within the site ensuring connectivity to other areas of suitable habitat used by GCN is maintained.

Bats

- 7.131 A sensitive lighting scheme including the avoidance of direct lighting of existing or proposed areas of potential bat habitat; directional low-level lighting, the avoidance of mercury/halide lamps and lighting only where necessary;
- 7.132 A scheme of bat boxes will be erected across the site to enhance the site for this species group.

Birds

- 7.133 To avoid disturbance to breeding birds, any small-scale vegetation clearance will be undertaken prior to the bird-breeding season (March to August/September). If this is not possible, vegetation will be checked prior to removal by an experienced ecologist. If active nests are found, vegetation will be left untouched until all birds have fledged. Specific advice will be provided prior to undertaking the clearance. This would be a statutory requirement due to the protection of all nesting birds and their nests under the Wildlife and Countryside Act 1981.
- 7.134 A scheme of bird boxes will be erected across the site. These will include:
- 7.135 A mixture of small hole (26mm and 32mm) boxes will be placed along the retained habitat around the proposed development area and will provide nesting opportunities for blue tit and great tit. These boxes generally have a high uptake rate;
- 7.136 Small open fronted nest boxes again will be placed throughout the site. These boxes typically attract robin and blackbird.

Monitoring

- 7.137 The Landscape and Ecological Management Plan provides details of monitoring the site ensure habitat management continues to enhance the biodiversity value of the site. This includes regular monitoring of the habitats to confirm that management is achieving the targets that will be set out within the document and to alter management prescriptions where appropriate. The detailed work schedule provides timescales for the monitoring of habitats (see Appendix 11).

Summary

Residual Effects

- 7.138 The residual effects consider the effects after the incorporation of mitigation measures. In the context of ecological assessment, many of these measures are incorporated as an integral part of the scheme design. This iterative process has resulted in the proposed development being designed and modified to take account of the surveys and assessments undertaken. This has enabled the extent and scale of the potential adverse effects to be continually appraised as part of the evolving masterplan and scheme design.
- 7.139 The design approaches adopted have included measures to avoid or reduce potentially significant adverse effects arising from the proposed development. Compensatory measures are also proposed where impacts, such as habitat loss, are unavoidable and, where this is proposed, compensatory habitat creation measures have sought to provide habitats that complement those located within and close to the site.
- 7.140 The residual impacts resulting from construction and operation of the site are detailed in Table 7.14.

Ecological Features	Effects	Magnitude	Mitigation	Residual Effect
Shortwood and Hay Green LWS	Temporary short-term negative impact on limited extent of feature.	Minor	General Construction Site Impact Avoidance Measures, Lighting Strategy	Negligible
Barrow Colliery Site LWS	Negligible	Negligible	n/a	Negligible

Ecological Features	Effects	Magnitude	Mitigation	Residual Effect
Semi-natural Broadleaved Woodland	Direct negative impact on vegetation	Major	General Construction Site Impact Avoidance Measures, Lighting Strategy, Construction Access Restrictions Creation of extensive native woodland and scrub as part of the green infrastructure proposals	Minor beneficial effect of local significance
Semi-Improved Grassland	Direct negative impact on vegetation	Major	General Construction Site Impact Avoidance Measures, Lighting Strategy, Construction Access Restrictions, Management Plan Creation of some areas of open grassland and management of retained areas.	Minor negative effects of local significance
Open Water	Temporary short term indirect negative impact on retained vegetation	Minor	General Construction Site Impact Avoidance Measures, Lighting Strategy, Drainage Proposals, Construction Access Restrictions, Management Plan	Negligible
Hedgerows	Permanent negative direct and indirect impacts.	Major	General Construction Site Impact Avoidance Measures, Lighting Strategy, Construction Access Restrictions, Habitat Creation, Management Plan	Negligible
Running Water	Temporary short term indirect negative impact on retained vegetation	Minor	General Construction Site Impact Avoidance Measures, Lighting Strategy, Drainage Proposals, Construction Access Restrictions, Management Plan	Negligible
Amphibians	Permanent negative direct and limited temporary short-term indirect impacts.	Moderate	General Construction Site Impact Avoidance Measures, Lighting Strategy, Drainage Proposals, Construction Access Restrictions, Management Plan	Negligible
Bats	Permanent negative direct and limited temporary short-term indirect impacts	Minor	General Construction Site Impact Avoidance Measures, Lighting Strategy, Construction Access Restrictions, Habitat Creation, Management Plan	Minor negative effect on fauna of local significance
Birds	Permanent negative direct and limited temporary short-term indirect impacts	Minor	General Construction Site Impact Avoidance Measures, Lighting Strategy, Construction Access Restrictions, Habitat Creation, Management Plan	Minor negative effect on fauna of local significance

Table 7.14 - Residual Effects Summary

Biodiversity Net Gain Assessment

7.141 The NPPF, requires developments to deliver ‘no net loss’ in biodiversity. Paragraph 170(d)) states:

“Planning policies and decisions should contribute to and enhance the natural and local environment by:.... d) minimising impacts on and providing net gains for biodiversity.....”

- 7.142 In compliance with this policy, a Biodiversity Impact Assessment has been completed using an accepted and nationally recognised metric developed by Warwickshire County Council, which provides an open and objective assessment of biodiversity net gains and losses (Appendix 12).
- 7.143 The results of the BIA demonstrate that the outline scheme currently will lead to the delivery of a total net gain in biodiversity for habitats and linear features.
- 7.144 The whole development area is valued at 85.38 units for habitats and 18.88 units for linear features. Taking into account habitat retention, the proposed development leads to a loss of 78.68 units for habitats and 16.56 units for linear features.
- 7.145 The creation of new areas of high-quality habitat and the enhancement of retained habitats, results in a delivery of 82.67 units, delivering a net gain in biodiversity of +3.99 units.
- 7.146 The creation of new hedgerows results in the delivery of 17.92 units, providing a net gain in biodiversity of +1.36 units.
- 7.147 In order to ensure that the benefits of the proposed habitat creation are maximised, a Biodiversity Management Plan will be secured by condition and detail the long-term management of the site necessary to secure these benefits.

8. Landscape and Visual Impact

Policy Background

National Planning Policy Framework (NPPF 2019)

8.1 Building a strong, competitive economy (Chapter 6) "...planning policy should:

- *set out a clear economic vision and strategy which positively and proactively encourages sustainable economic growth, having regard to Local Industrial Strategies and other local policies for economic development and regeneration; and*
- *set criteria, or identify strategic sites, for local and inward investment to match the strategy and to meet anticipated needs over the plan period.*

Planning Practice Guidance (2014)

8.2 With regard to the assessment of landscape character being used to inform plan-making and planning decisions, the PPG states that: *"Where appropriate, landscape character assessments should be prepared to complement Natural England's National Character Area profiles. Landscape Character Assessment is a tool to help understand the character and local distinctiveness of the landscape and identify the features that give it a sense of place. It can help to inform, plan and manage change and may be undertaken at a scale appropriate to local and neighbourhood plan-making."* (para 001)

8.3 The PPG also provides a brief description of Green Infrastructure (GI):

"Green infrastructure is a network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities. Green infrastructure includes parks, open spaces, playing fields, woodlands, street trees, allotments and private gardens." (para 015)

Barnsley Local Plan (Adopted January 2019), Barnsley Metropolitan Borough Council:

8.4 The following policies are considered to be relevant in the context of landscape and visual matters:

8.5 Policy D1 Local Character - High quality design and Place making (p152): *Development is expected to be of high quality design and will be expected to respect, take advantage of and reinforce the distinctive, local character and features of Barnsley, including: Landscape character, topography, green infrastructure assets, important habitats, woodlands and other natural features; Views and vistas to key buildings, landmarks, skylines and gateways;*

8.6 Policy LC1 Local Character - Landscape Character (p.153): *Development will be expected to retain and enhance the character and distinctiveness of the individual Landscape Character area in which it is located (as set out in the Landscape Character Assessment of Barnsley Borough 2002 and any subsequent amendments).*

8.7 Policy GI1- Green Infrastructure and Greenspace (p.228) *We will protect, maintain, enhance and create an integrated network of connected and multi-functional Green Infrastructure assets.*

- 8.8 Policy GS1 Green Ways and Public Rights of Ways (p.235). *Where development affects an existing Green Way or Public Right of Way it must: Protect the existing route within the development; or Include an equally convenient and attractive alternative route.*
- 8.9 Dearne Valley Green Heart Nature Improvement Area (p.245) *Nature Improvement Areas (NIAs) are large, discrete areas that will deliver a step change in nature conservation, where a local partnership has a shared vision for their natural environment....As set out in the Relationship with Plans and Strategies section, the Dearne Valley Green Heart has been designated as an NIA and its extent within Barnsley's boundary can be seen in the Green Infrastructure Diagram. The Council expects to adopt an NIA Planning Advice Note which will encourage major developments to incorporate biodiversity enhancements in their proposals.*
- 8.10 The application sites are allocated for employment uses (use class B1/B2/B8) in Policies E1 and E2 (site references ES15 and ES17).
- 8.11 Policy E1 Providing Strategic Employment Locations, (p.34) *297 ha of land in sustainable locations is allocated to meet the development needs of existing and future industry and business up to 2033..... In terms of providing new job opportunities in the borough, the main focus will be on: Urban Barnsley including Barnsley Town Centre (through the commercial and retail sectors); and Principal Towns (which includes Hoyland)*
- 8.12 Policy E2 The Distribution of New Employment Sites, (p.35). The two sites are allocated as for new employment sites as
- ES15 Shortwood Extension, and;
 - ES17 Land South of Dearne Valley Parkway.
- 8.13 ES15 Shortwood Extension - The development will be expected to (inter-alia):
- *Ensure that development does not impair the visual amenity of the landscape (wider countryside). Potential mitigation measures include restrictions on building heights, landscaping and structural planting;*
 - *Consider the potential impact on the nearby Shortwood and Hay Green Local Wildlife Sites and include appropriate mitigation where necessary;*
 - *Retain the valuable habitats in the south-western corner of the site and exclude them from the scope of any development proposals. The site has potential as a habitat for newts, so it is recommended that this possibility is investigated prior to any development; and*
 - *Protect the routes of the Green way and Public Rights of Way that cross the site and make provision for these as part of any proposal.*
- 8.14 ES17 Land South of Dearne Valley Parkway - The development will be expected (inter-alia):
- *Consider and minimise the impact on the setting of listed buildings through appropriate design and landscaping;*
 - *Ensure that development respects the landscape and wider countryside, and where appropriate mitigation measures are incorporated to address impacts on the adjacent Green Belt and countryside; and Protect and retain the Green way, Public Footpaths and Bridleways, cutting through and along the periphery of the site, and make provision for them in the design of the layout.*

- 8.15 ES17 is part of the wider Hoyland North Masterplan.

Methodology and Assessment Criteria

- 8.16 This assessment has been carried out in accordance with the “Guidelines for Landscape and Visual Impact Assessment” (GLVIA3) (3rd. Edition, 2013) produced by The Landscape Institute and the Institute of Environmental Management & Assessment.
- 8.17 GLVIA3 acknowledges that LVIA can be carried out either as part of an Environmental Impact Assessment (EIA) or as a standalone assessment. In either case, the general principles and approach remain the same, however, there are certain EIA procedures that LVIA must comply with which standalone assessments do not. This chiefly relates to determining the significance of identified effects on the landscape and visual resource. As this LVIA forms part of an ES, the significance of identified effects is considered.

Purpose of Assessment

- 8.18 The report studies the effects of a given development on (i) the landscape character and landscape resources of the site and its environs, and (ii) the visual amenity experienced by people within, through and surrounding the proposed development. These two components are described separately within this report, (see Appendix 12).
- 8.19 Landscape impacts describe the likely effects of the development proposals on the physical character and quality of the landscape – i.e. the Environmental Resource. In a similar way, visual effects describe the likely changes that the development will have within the views of receptors, i.e. people that have a viewing opportunity of the development such as local residents, walkers, road users, etc.
- 8.20 There are six principle parts to the assessment process, namely:
- Identify the changes proposed as a result of proposed development and their likely effects, considering inherent mitigation from the outset.
 - Describe the baseline condition of the site, its environs and the extent of visibility available to surrounding receptors.
 - Ascribe an evaluation of the landscape’s sensitivity to change, combining judgments of the landscape’s susceptibility to change of the type proposed and the value attached to the landscape.
 - Ascribe an evaluation of each visual receptor’s sensitivity, combining judgments of their susceptibility to change and the value attributed to their view.
 - Identify any impacts predicted to occur within the landscape and within views towards the development.
 - Identify further mitigation (as required) to prevent, reduce or alleviate anticipated negative effects and assess any residual effects predicted to occur once further mitigation has become established.
- 8.21 Predicted effects may occur both during construction as well as operation / occupation of the development and as such each stage of the development should be assessed individually.

- 8.22 Whilst quantitative measurements should be employed, where practicable the GLVIA guidance explains that a degree of professional experience and judgment should be exercised during the Landscape and Visual Appraisal (LVA) process and that these judgments should be *“appropriate and proportional”* (GLVIA (2013), cl. 2.24, para. 1.17). Professional opinions are given within the framework of *“clear and transparent methods so that the reasoning applied at different stages can be traced and examined by others.”* GLVIA (2013), cl. 2.24, page 21.

Defining the Baseline

- 8.23 The baseline study aims to provide an appropriate benchmark from which an appraisal of effects is based. The baseline sets out what the landscape is comprised of, describing its constituent parts, its function, its character, condition, value and susceptibility to change. It also describes the visual resource i.e. the area within which the development may be visible, the people (visual receptors) who may have views of the development and the nature of these views, i.e. whether they are distant, up close, open, constrained, transient, prolonged, etc.
- 8.24 Where existing landscape character assessments are available, the baseline landscape is described with reference to published reports.
- 8.25 The methodology for assessment is set out in Appendix 12.

Sensitivity to Change

- 8.26 The GLVIA3 states that sensitivity is *“the nature of the receptor likely to be affected.”* GLVIA3 (2013), cl. 3.24, page 38.
- 8.27 Both the landscape and visual receptors with potential views of the proposed development are ascribed a ‘sensitivity’. Judgments on sensitivity are derived by assessing the landscape value / value attributed to the view of the visual receptor and the landscape / receptor’s susceptibility to change of the type proposed. Judgments regarding sensitivity are taken forward in combination with an assessment of magnitude to determine significance.

Value

- 8.28 The value of a landscape receptor is defined within the GLVIA3 as: *“...the relative value that is attached to different landscapes by society, bearing in mind that a landscape may be valued by different stakeholders for a whole variety of reasons...Landscapes or their component parts may be valued at the community, local, national or international levels.”* GLVIA3 (2013), cl. 5.19, page 80.
- 8.29 The value of the landscape is recorded on a scale of ‘National’, ‘Regional’ or ‘Local’. Where there is no published evidence to support an assessment of value, an evaluation should be made based on the criteria outlined in Box 5.1 of the GLVIA3 (identified at Table 8.1). It is important to note, however, that an assessment of value requires professional judgment, where a standard approach cannot be considered appropriate in all cases and will vary from place to place. (GLVIA3 para 5.29 bullet 1).
- 8.30 The value of a visual receptor is determined through judgments made by combining an assessment of susceptibility to change of the type proposed with visual amenity and the value attached to particular views (refer to Table 8.2). An assessment is made for each receptor with reference to representative views.
- 8.31 Where published evidence is available to support an assessment of value the following will be applied:

- International or national landscape designations, such as National Parks, Areas of Outstanding Natural Beauty, World Heritage Sites, and Scheduled Ancient Monuments (SAMs), typically comprise settings of high landscape quality and as such should be considered of High landscape value.
- Regional designations such as Special Landscape Areas or Conservation Areas, listed buildings, registered parks and gardens, and ancient woodland should be considered on their individual merits but are typically considered to be of medium or high value depending upon their extents and the cultural and / or natural links they have to the landscape.
- Local landscape designations such as Public Open Space, Tree Preservation Orders, Areas of Local Landscape Importance etc, may be considered important at a local level and as such their value should be considered on a scale of Low to High. An assessment against Table 8.1 should be undertaken.

Assessment of Landscape Receptor Value		
Low	Medium	High
Condition/ quality		
A landscape with little or no sign of management and / or a neglected landscape, with individual elements in a poor state or repair.	A landscape with signs of piecemeal management and / or showing signs of decline, with individual elements in a moderate state of repair.	A well-managed and / or largely intact landscape, with individual elements in a good state or repair.
Scenic quality		
A landscape with little or no aesthetic appeal and/or amenity value.	A landscape with moderate aesthetic appeal and/or amenity value.	A landscape with high aesthetic appeal and/or amenity value.
Rarity and representativeness		
A landscape which does not contain rare landscape types or features.	A landscape which contains characteristic but un-unique landscape types or features.	A landscape which contains one or more rare landscape types or features.
Conservation interests		
A landscape with no or limited heritage /cultural /nature conservation content.	A landscape with some heritage /cultural /nature conservation content.	A landscape with rich heritage /cultural /nature conservation content.
Recreation value		
A landscape, with no or limited contribution to recreational experience and/or amenity value.	A landscape which provides some contribution to recreational experience and/or amenity value.	A distinct landscape which forms a strong contribution to recreational experience and/or amenity value.
Perceptual aspects		
A landscape with prominent detractors intrinsic to its character.	A landscape that retains some perceptual values (wildness/ tranquillity etc.) amidst some perceptual detractors.	A wild, tranquil or unspoilt landscape without noticeable detractors.
Cultural associations		
A landscape without recorded cultural associations.	A landscape with some and/or moderately valued cultural associations.	A landscape of rich and/or highly valued cultural associations.
Overall Judgement of Receptor Value		
Low value – receptor poorly reflects high and medium value criteria above.	Medium value – receptor moderately reflects high and medium value criteria above.	High value – receptor strongly reflects high and medium value criteria above.

Table 8.1: Value of Landscape Receptors

Assessment of Visual Receptor Value		
Low	Medium	High
Views from and visual amenity associated with every-day locations or routes that do not benefit from any designation or cultural associations.	Views from and visual amenity associated with viewpoints of district or local importance, local visitor attractions or public open space and routes where views and visual amenity form an integral part of the attraction. Views from regional or local landscape designations such as Special Landscape Areas or equivalent.	Views from and visual amenity associated with viewpoints of regional or national importance, popular visitor attractions where views and visual amenity form a key part of the attraction or route. Inclusion within guidebooks or cultural references such as literature and art or as part of heritage character. Views from areas with national designations such as National Parks and Areas of Outstanding Natural Beauty or regional or local landscape designations such as Special Landscape Areas or equivalent.

Table 8.2: Value of Visual Receptors

Susceptibility

- 8.32 The GLVIA defines susceptibility as the ability of a landscape to accommodate change *‘without undue consequences for the maintenance of the baseline situation’*. With regard to visual amenity, susceptibility relates to the occupation or activity of receptors and *‘the extent to which their attention or interest relates to the view’*. (GLVIA paras 5.40 and 6.32 respectively).
- 8.33 Receptor susceptibility is identified in Table 8.3 and is applicable to landscape character areas as whole, designated areas, individual characteristics that contribute to the overall landscape as well as to visual receptors. Susceptibility can relate to particular aesthetic or perceptual aspects or the compliance or otherwise to current landscape planning policy / strategy.
- 8.34 Susceptibility of a landscape receptor and / or visual receptor to change is specific to the type and scale of development proposed. Judgments on susceptibility are considered on a scale of High, Medium or Low as per Table 8.3.

Susceptibility	Description
High	Little or no ability to accommodate the proposed development without adverse consequences for the retention of the existing landscape baseline situation and / or the achievement of landscape planning policies and strategies. Little or no ability to accommodate the proposed development without adverse consequences to visual receptors whose primary viewing interest is proprietary, relates to heritage assets, visitor attractions, recognised scenic routes or whose attention or interest is focused on the landscape.
Medium	Some ability to accommodate the proposed development without adverse consequences for the retention of the existing landscape baseline or the delivery of landscape planning policies and strategies. Some ability to accommodate the proposed development without adverse consequences to visual receptors with a secondary interest in the landscape such as travellers passing through the landscape (motorists) or the users of recreation areas whose attention or interest is not the primary focus.

Low	An ability to accommodate the proposed development without adverse consequences for the retention of the existing landscape baseline or the delivery of landscape planning policies and strategies. An ability to accommodate the proposed development without adverse consequences to visual receptors with no or limited visual interest in the landscape such as people at work, travelers passing through an area at speed
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Table 8.3: Susceptibility to Change of Landscape and Visual Receptors

- 8.35 As noted sensitivity is determined by combining judgments relating to value and susceptibility to change of the type proposed. Judgments on sensitivity are considered on a scale of High, Medium or Low as per Table 8.4 (below).

High	A landscape or visual receptor considered to be highly susceptible to change of the type proposed with little or no capacity to accommodate such change. A highly valued landscape or visual receptor with particularly distinctive characteristics whether directly demonstrable or perceived.
Medium	A landscape or visual receptor which is considered to be potentially tolerant to change of the type proposed. A landscape or visual receptor which have less obvious or partially degraded characteristics whether directly demonstrable or perceived.
Low	A landscape or visual receptor which is considered to be tolerant to change of the type proposed. A landscape or visual receptor with degraded characteristics and the capacity to accommodate change of the type proposed.

Table 8.4: Sensitivity to Change of Landscape and Visual Receptors

Magnitude of Change

- 8.36 The GLVIA3 states that magnitude is “*the nature of the effect likely to occur.*” GLVIA3 (2013), cl. 3.24, page 38.
- 8.37 The Magnitude of Change predicted is determined by the size and scale of effects on the landscape, the duration and reversibility of anticipated effects, the integration of effects with the baseline and the geographical extent of the area that will be affected.
- 8.38 With regard to visual receptors the magnitude of effects are considered in relation to the degree of change in the view, change in the composition of a view, the manner to which the proposed development visually integrates with its surrounds, (blends in or contrasts), the angle of view, the distance of the viewpoint from the proposed development and the extent of the development that will be visible i.e. all of the development or only a small proportion of the development.
- 8.39 For transient receptors, such as motorists for example, the relative amount of time over which views of the proposed development will be available are considered. Effects on the landscape and visual receptors can be permanent or temporary i.e. long term or short term. Also, they can be direct or indirect, i.e. directly as a result of the development or indirectly through for example off-site services diversions or junction alterations, etc.
- 8.40 The magnitude of effects is considered during construction, on completion of the development and following the establishment of planting, usually taken at 15 years post completion. A variation of this period can be applied dependent upon the specific project and / or location of the site.
- 8.41 The size and scale of effects includes the proportion or extent of the landscape or view that will be lost or altered, the degree to which aesthetic or perceptual elements are altered and whether changes effect key characteristics of the landscape or view which are considered critical to this character.

- 8.42 Scale relates to whether effects are considered to effect the site and / or the wider landscape setting of the site (local), the wider character area within which the site is located (regional) or the wider region (national).
- 8.43 Reversibility considers whether effects are fully reversible, i.e. the landscape or view can be returned to its baseline condition, partially reversible, i.e mitigation would resemble the original baseline condition or irreversible, i.e. changes are permanent.
- 8.44 Duration is defined in the GLVIA as Long Term, between 10 to 25 years, midterm 5 to 10 years and short term 0 to 5 years.
- 8.45 The following scale is used to quantify the magnitude of effect:

Magnitude	Description
High Adverse	A considerable variance to the landscape, or view thereof, degrading it's integrity.
Medium Adverse	A noticeable variance to the landscape, or view thereof, which is at odds with the defined baseline
Low Adverse	A barely perceptible change to the landscape, or view thereof, which is slightly at odds with the defined baseline
No change	No discernible change in the landscape, or view thereof
Low Beneficial	A modest change to the landscape, or view thereof, that results in discernible benefits to landscape/visual resource
Medium Beneficial	A notable variance to the landscape, or view thereof, that benefits the landscape/visual resource
High Beneficial	A considerable variance to the landscape, or view thereof, that results in significant benefits to the landscape/visual resource

Table 8.5: Magnitude of Change as experienced by Landscape and Visual Receptors

Significance

- 8.46 The assessment of significance is derived by combining the judgments made about landscape and / or visual receptor sensitivity and the magnitude of change within the landscape and or for each receptor. This assessment should include a clear narrative to explain the reasoning behind judgments made.
- 8.47 The GLVIA3 states the following *“There are no hard and fast rules about what makes a significant effect, and there cannot be a standard approach since circumstances vary with the location and landscape context and with the type of proposal. At the opposite ends of a spectrum it is reasonable to say that:*
- 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;
 - 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 least significance and may, depending on the circumstances, be judged as not significant; and
 - Where assessments of significance place landscape effects between these extremes, judgments must be made about whether or not they are significant, with full explanations of why these conclusions have been reached.” GLVIA3 (2013), cl. 5.56, pages 92-3
 - Further guidance on the significance of visual effects 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 viewing points 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.” GLVIA3 (2013), cl. 6.44, page 116.

8.48 Effect significance can be either adverse or beneficial as attributed by the magnitude of change (see Table 8.5). Whether adverse or beneficial, the significance of effects during construction, at year 0 on completion of construction and at year 15 are evaluated within this assessment.

Determining Effects					
Sensitivity	Magnitude of Change				
		No Change	Low	Medium	High
	Low	Negligible	Minor	Minor	Moderate
	Medium	Negligible	Minor	Minor	Major/Moderate
	High	Negligible	Moderate/Minor	Major/Moderate	Major

Table 8.6: Change as Defined by Sensitivity and Magnitude

8.49 Descriptors of significance (see Table 8.6) are outlined in the following table

Significance	Description
Major	An effect considered very important in the decision making process.
Moderate	An effect that is notable and one that is generally considered to be material in the decision making process.
Minor	An effect that will be noticed, but is not considered to be an important factor in the decision making process
Negligible	An effect that will be discernible, but of very limited consequences and one that not important or relevant to the decision process.

Table 8.7: Change to Landscape and Visual Receptors

8.50 For each stage of the assessment, professional judgment is applied to determine levels of sensitivity, magnitude of change and overall significance. This approach follows GLVIA3 guidance whereby reasoned justification is advocated over more formulaic tables or matrices in presenting the findings of the LVIA. Overall significance is also stated simply as being either ‘significant’ or ‘not significant’ and avoids using matrices for different thresholds or levels of significance.

- 8.51 The Methodology considers impacts of moderate or major effect to be significant and therefore material in the decision-making process. As such, impacts of moderate or major are to be mitigated where practicable to reduce impacts to an acceptable level.

Mitigation

- 8.52 The GLVIA3 states the following for the mitigation of landscape effects, “Where landscape effects are judged to be significant and adverse, proposals for preventing/avoiding, reducing, or offsetting or compensating for them (referred to as mitigation) should be described. The significant landscape effects remaining after mitigation should be summarised as the final step in the process.” GLVIA3 (2013), cl. 5.57, page 93
- 8.53 And similarly for visual effects “Where visual effects are judged to be significant and adverse, proposals for preventing/avoiding, reducing, or offsetting or compensating for them (referred to as mitigation) should be described. The significant landscape effects remaining after mitigation should be summarised as the final step in the process.” (GLVIA3 (2013), cl. 6.45, page 116.

Three types of mitigation are considered as follows:

- ‘Primary’ mitigation, where mitigation has been designed into the proposals described in Section 3 and which is considered from the outset. Inherent mitigation may include screen planting, open space and habitat creation, assessed for its impact on the landscape or change to visual amenity.
- Construction - This relates to good practice during the construction stage of the development and includes hoarding, tree protection, restricted working hours etc.
- ‘Actionable’ mitigation - or secondary mitigation, where possible interventions will help prevent, reduce or offset the anticipated significant adverse effects on landscape or visual amenity predicted to arise as a result of development.
- Due to the ‘Primary’ measures taken within this iterative process ‘Actionable’ measures are not typically required. Should any ‘Actionable’ measures be identified these will be identified accordingly and residual effects reported.
- Standard construction and operational management practices to reduce effects during the construction period are outlined.

Cumulative Assessment

- 8.54 The cumulative impact assessment will describe the ways in which the proposed development will have additional impacts on both the existing landscape character and visual amenity when considered together with other developments that are either operational, under construction, consented or in the planning process.
- 8.55 Two types of cumulative landscape character effects will be assessed:
- 8.56 On the physical fabric of the landscape, such as when two or more developments affect landscape components, such as woodland or hedgerows; and
- 8.57 On the landscape character, such as when two or more developments introduce new features into the landscape, which would change the overall character or value.
- 8.58 Two types of cumulative visual amenity effects will be assessed:

- 8.59 Combined: This occurs when the viewer is able to see two or more developments from one viewpoint. Combined visibility may either be in combination, where several developments are within the viewer's arc of vision at the same time, or in succession, where the viewer has to turn to see the various developments; and
- 8.60 Sequential: This occurs when the viewer has to move to another viewpoint to see different developments. Sequential effects occur along regularly used routes like major roads or paths. Sequential effects may range from frequent (appear regularly and with short time lapses, depending on speed of travel and distance between viewpoints), to occasional [(long time lapses between appearance as the viewer is moving slowly and/or there are large distances between the viewpoints)].

Consultations

- 8.61 Draft viewpoints for the LVIA were sent to the Harworth Group and Cushman & Wakefield on Wednesday 20 November 2019 for consideration. This included 16 viewpoints within a 2km radius of the site. These viewpoints were agreed, with no alterations. During a site survey, viewpoints were amended to 15 viewpoints in line with conditions found on site. The viewpoint photography for Viewpoint 1 to 15 was undertaken on 28 November 2019.
- 8.62 The draft viewpoints were sent to Barnsley Borough Council, by Cushman & Wakefield on the 22 November 2019 for consideration and feedback. Feedback was received on the viewpoints on 02 December 2019 from Barnsley Borough Council requesting 3 additional viewpoints. A site visit and survey was undertaken on 06 December 2019 to accommodate these requests. See Figure 8.1 p99.

Limitations

- 8.63 This report only assesses the developments proposed for Land to the north and south of Dearne Valley Parkway, compartments ES15 and ES17. For the cumulative assessment the Hoyland North Masterplan area is also considered.
- 8.64 No technical difficulties were encountered in carrying out the visual assessment presented in this document.
- 8.65 Practical problems encountered during the on-site visual assessment included inaccessibility of PRow Hoyland Nether UD 5 which runs through compartment ES15, adverse weather conditions prior to the site visit had flooded the path, and the path was judged to be overgrown and unsafe to access. An adjoining viewpoint was taken to represent residents of Shortwood Villas (Viewpoint 11).
- 8.66 The GLVIA3 guidance suggests that consideration be given to seasonal variation in effects where appropriate but acknowledges that the timing of the assessment may mean that this is not practical (p112, para 6.28). In this LVIA we adopt an approach that where there would be potentially significant differences between seasonal views, this would be indicated in the assessment and taken into consideration in reaching conclusions.



Figure 8.1 – Viewpoints Plan

Baseline Conditions

- 8.67 This section considers the baseline information including National and Local Landscape Character Assessments and Landscape Context.

Landscape Character

- 8.68 The various elements of a landscape when viewed in combination, including historical and cultural associations, set one landscape apart from another and make its character unique to the people who both live in or visit the area. Landscape Character Assessment (LCA) is a process of critically examining a landscape, recognising 'Character Areas' through the identification of distinctive features. This presents a benchmark from which an assessment of each character area's capacity to accommodate change can be measured.
- 8.69 There are a number of sources, produced nationally and at the local level, which can help form this benchmark or baseline. Natural England's 'National Character Area Profiles, District-Level Assessment and Townscape Assessment' can help inform the site's landscape baseline. Natural England has coordinated the identification of Landscape Character across England. Together these reflect a division into areas with particular combinations of geology, soil, plants, animals, settlement history, land use, scenery, heritage and culture.
- 8.70 At a national level the site and its environs falls within NCA 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield. As shown in Appendix 12

National Character Area Profile, Natural England (2014) - NCA 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield

- 8.71 “The Nottinghamshire, Derbyshire and Yorkshire Coalfield is an area that has seen great change over the past few centuries.” (p.3)
- 8.72 “A generally low-lying area, with hills and escarpments above wide valleys, the landscape embraces major industrial towns and cities as well as villages and countryside.” (p.3)
- 8.73 Key characteristics for this NCA 38 relevant to the site are described as:
- *A low-lying landscape of rolling ridges with rounded sandstone escarpments and large rivers running through broad valleys, underlain by Pennine Coal Measures.*
 - *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, including woodlands, river valley habitats and subsidence flashes, with field boundaries of clipped hedges or fences.*
 - *Many areas affected by urban fringe pressures creating fragmented landscapes, some with a dilapidated character, separated by substantial stretches of intact agricultural land in both arable and pastoral use.*
 - *A strong cultural identity arising from a history of coal mining, steel making and other heavy industry which resulted from the close relationship between underlying geology and resource availability, notably water power, iron ore and coal.*
 - *Features of industrial heritage such as mills, goits, tips, old railway lines, canals and bridges are evident, along with former mining villages.*
 - *Widespread influence of transport routes, including canals, roads and railways, with ribbon developments emphasising the urban influence in the landscape.*
 - *An extensive network of multi-user trails on former railway lines and canal towpaths, such as the Trans Pennine Trail and the Ebor Way.*
 - *Continuing development pressure including land renewal and regeneration projects, especially along river corridors and around towns.*
- 8.74 Key Characteristics, on Nottingham, Derbyshire and Yorkshire Coalfield landscape character today:
- *Nottinghamshire, Derbyshire and Yorkshire Coalfield is a large area which embraces major industrial towns and cities as well as villages and wider tracts of countryside (p.8).*
 - *Semi-natural habitats, including woodland, grassland, important remnant lowland heaths, open water and river valley wetland habitats, tend to be fragmented and scattered, their scarcity giving them greater significance (p.9).*
 - *The once-active coal mining industry has now largely closed, with colliery sites and spoil tips graded out and restored to woodland and pasture, so that just a few tips are still in evidence (p.9).*

- *More recent engineering, manufacturing and light industrial uses, as well as commercial and retail sites, have extended out from the urban areas. As a result there is a dense network of roads, including the M1 running north–south and the M62 running east–west, railways and canals. Warehousing development around motorway junctions is a recent feature throughout and has a significant impact on the overall character of the landscape (p.9).*

8.75 Statements of Environmental Opportunities:

- *SEO 1: Restore and enhance existing areas and create new landscapes through the inclusion of woodland and networks of green infrastructure to raise the overall quality of design and location of new developments. Regeneration and restoration of industrial sites should seek to create green infrastructure that links fragments of the natural environment, leading to a functioning network for wildlife and access and recreational amenities for people (p.18).*
- *SEO 2: Protect and manage the archaeological and historical environment to safeguard a strong sense of cultural identity and heritage, particularly mining heritage, and use the area’s distinctive sense of place to inspire interpretation and new development. Engage local communities with their past by enhancing the early, industrial and mining landscapes through restoration of key features of sites and improving access and interpretation (p.20).*
- *SEO 3: Conserve, enhance and expand areas and corridors of semi-natural habitat such as grasslands and woodlands to create a functioning ecological network that links the fragmented patches of habitats through urban and sustainably farmed environments, thus assisting species and habitat adaptation to climate change, reducing soil erosion and diffuse pollution (p.21).*

Borough of Barnsley Landscape Character Assessment (2002)

8.76 At a regional level, the site sits within the character area of: “E Settled Wooded Farmland - E4 Hoyland Settled Wooded Farmland” character area (as Shown at Appendix 12):

8.77 The landscape character of E4 Hoyland Settled Wooded Farmland is described as: “*Uneven erosion of the varied geology has resulted in a rolling landform.*” “*The character area comprises a diverse range of land uses. Settlements, woodland and agriculture cover a large proportion of the character area. There is a smaller area of land devoted to industry and recreation. Evidence of the former predominance of industry in the area is strong, mainly as reclaimed tips, dismantled railways and canals.*” Two large settlements dominate the landscape character area, Wombwell and Hoyland. “*The character area contains a network of major roads, including the M1 motorway, the A61 running from Junction 36 of the M1 to Barnsley and Sheffield, and the new A6195 dual carriageway.*” (p.168-169)

8.78 Hoyland Settled Wooded Farmland LCA Key Characteristics:

- *Rolling landform with slopes towards River Dove watershed and canal associated with Elsecar.*
- *Diverse range of land use, including residential, woodland, agriculture, industry, landscape renewal, communication and recreation.*
- *Presence of large settlements on broad valley sides up to higher ground strongly influences character of surrounding land.*

- *Smaller settlements are found in elevated locations, including Pilley, Birdwell and Blacker Hill.*
- *Strong urban influence with urban pressures, such as horse grazing in compartmentalised fields, litter and fly tipping, tatty allotments and scrap heaps, evident throughout but concentrated on urban fringes.*
- *Mainly deciduous woodland blocks of various sizes, including ancient woodland and new plantations on reclaimed tips.*
- *Farmland is a mixture of arable and permanent pasture.*
- *Degraded and unmanaged field boundaries consist of fences, hedgerows and stone walls.*
- *Scattered farmsteads are found in areas of agricultural land between the settlements.*
- *Evidence of current and past industrial activity due to the presence of industrial estates, many reclaimed spoil heaps and remains of bell pits at Tankersley Park*
- *Recreational land use including Urban Greenspace between Hoyland and Jump, and two golf courses adjacent to major roads.*
- *Presence of major road corridors with associated noise and visual intrusion, and vacant land that indicates plans for future development.*

8.79 Landscape Guidelines for development Hoyland Settled Wooded Farmland (p.175-6)

- *Site developments in unobtrusive locations and utilise the landform to conceal them in order to minimise further urbanisation of the character area.*
- *Settlement layout should complement landform by following and enhancing natural variations in topography.*
- *Settlement pattern should complement and strengthen existing landscape elements such as woodlands and hedgerows, to build on existing patterns and textures in the landscape.*
- *Unify the urban edge utilising a limited palette of building materials and styles and drawing inspiration from existing built form.*
- *Maintain the existing convoluted form of urban edge with parcels of countryside and Urban Greenspace running into urban areas.*
- *Maintain separation between settlements so that they retain their own identity.*
- *Maintain green space between major transport routes and settlements in order to limit the perception of urban sprawl.*
- *Protect and improve residual countryside after development has taken place, as it will be under strong pressures from urban areas.*
- *Soften built form on urban edge with tree planting, woodland blocks and strips and rural hedgerows.*

- *Consider the use of local stone for boundary features and use muted colours for new built development to integrate it into the landscape.*
- *Maintain views to existing landmark buildings such as church towers and spires in planning new development.*
- *Maintain strategic views out from settlements across the surrounding Countryside.*
- *Respect the recreation importance of the landscape, in particular footpaths connecting rural and urban environments.*

8.80 Within the Landscape Character Area of Hoyland Settled Wooded Farmland eight areas associated with existing urban edges were investigated with a “Detailed Assessment for Potential Development” for their potential for built development. The proposed site for development includes two of these areas: East of Birdwell and North west of Hoyland (p.172-174).

8.81 East of Birdwell (p.173): *The settlement of Birdwell is situated on elevated land that slopes away to the east to a tributary feeding the River Dove. The land immediately to the east of Birdwell is therefore visually exposed. It consists of intact arable farmland and pasture with some compartmentalisation of fields for pony grazing. Farmland contains woodland blocks including some recent tree planting and some individual mature trees adjacent to the urban edge. This provides a gradual transition from farmland to urban areas and helps to soften the built edge..... It is considered that the landscape character area would depreciate if built development was to occur on the visually exposed slopes, and development is not recommended in these locations. However, there might be small areas that could respond well to a very limited amount of development if it were situated on higher, flatter ground, in local depressions in the landform and integrated with woodland blocks.*

8.82 North west of Hoyland (p.173-174): *The area has sloping and flat areas that consist of immature reclaimed land with rough grass, scrub and newly planted trees, and pasture bounded by post and wire fences or unmanaged hedgerows.....It is considered that the area has some potential for limited development that could occur without adverse effects on landscape character, and that there is scope for improving the condition and character of some sections of urban edge through development. It is important to preserve a width of open countryside, and ensure that this of strong character and in good condition, between the A6195 and the urban edge, to provide a positive impression for users of this busy road. It is also important to ensure that development is partially screened by local variations in landform, and does not sprawl down valley slopes where it would bring an urbanising influence into the open, rural core of this character area.*

Borough of Barnsley Landscape Character Assessment (2016 Review)

8.83 The Borough of Barnsley Landscape Character Assessment (2002) was reviewed in 2016 “to ascertain whether changes made to the landscape since 2002 have materially altered the findings of the study in respect the landscape types and their respective landscape condition, strength of character, sensitivity and landscape capacity” (p.1).

8.84 Landscape Character area ‘E: Settled Wooded Farmland’ was reviewed in 2016 as (p21): *Despite including the characteristics typical of the settled wooded farmland landscape, the character area includes extensive urban development, former and modern industrial uses and major roads. This is also recognised in the Landscape Character Assessment was undertaken on behalf of the Dearne Valley Green Heart Partnership in 2011. Accordingly, the overall*

strength of character is considered to remain moderate. In terms of landscape condition, whilst land reclamation schemes are now more established the overall condition remains poor.

- The 2002 Assessment concluded that in most cases development would depreciate landscape character but that some areas could be developed with relatively limited harm. This included parcels of land to the north and south west of Hoyland. Whilst there have been significant changes along the A6195, the recommendations remain largely relevant and so landscape sensitivity is judged to remain low and landscape capacity is judged to be medium.*

Landscape Character Summary

- 8.85 Overall in terms of landscape character the susceptibility to change of landscape would be classed as medium. The Landscape resource therefore has some capacity to accommodate the proposed development without unacceptable adverse consequences. The magnitude of change is classed as Medium Adverse, with a noticeable variance to the landscape baseline. When combined, these scores determine that the significance of effects is moderate. This effect is therefore deemed of significance and requires secondary mitigation to reduce the impact on landscape character. See Landscape and Ecological Management Plan for further details of proposed mitigation (Appendix 11).

Landscape Baseline

- 8.86 The following section describes the existing prevailing conditions within the site and its immediate landscape context. A study area of 2.5km buffer from the proposed site has been established to assess the landscape and surrounding context.

Settlement, Infrastructure and The Wider Context

- 8.87 The site is 37.76 hectares in size and is located in south Barnsley. The site is split into two compartments in the north and south by the A6195 also known as The Dearne Valley Parkway. The M1 lies circa 830m to the west of the site - Junction gateway 36.
- 8.88 The site is located on former colliery land, which has been remediated with tree planting which is now well-established. Both sites consist of woodland compartments and fields.
- 8.89 The nearest principal town is Hoyland which lies at approx 1-km to the south of the site, whilst the settlement of Birdwell lies approximately 1.5km to the North West of the site. Birdwell's urban edge consists of intact arable farmland and pasture with some compartmentalisation of fields for grazing, with woodland blocks. Hoyland's urban edge consists of a mixture of housing and industrial development.
- 8.90 The northern compartment ES15's site boundary is adjoined on the east and west by industrial mixed-use developments, the west being developed more recently. The northern boundary of the compartment ES15 is edged by Shortwood, allocated in the Barnsley Local Plan as a site of biodiversity or geological interest and which lies within greenbelt. This then leads into open countryside, with agricultural fields located between the proposed site and the residential areas of Birdwell, with residential properties overlooking the site.
- 8.91 The southern compartment ES17 is edged by agricultural fields to the east, south and west, before leading onto the residential areas of Hoyland and Hoyland Common with residential properties overlooking the site.

- 8.92 Both sites ES15 and ES17 are allocated in Barnsley Local plan (adopted 2019) as sites for employment development. ES17 is also part of the Hoyland North Masterplan Framework. The Framework allocates ES17 as an employment site alongside land adjoining the proposed site to the west, named as ES14. The surrounding fields to the east and south of ES17 are also allocated within the framework for housing. These are named as HS64, HS66 and HS56 within the Local Plan & Framework.

Topography & Hydrology

- 8.93 The contours on north compartment ES15 rise from their lowest point at 117m AOD adjacent to Shortwood on the northern boundary of ES15, to their highest point at 134m AOD along Dearne Valley Parkway to the south of the compartment. The south compartment ES17 rises from its lowest point at 134m AOD along Dearne Valley Parkway to the north of the compartment, to its highest point of 167m AOD to Hoyland to the south of the compartment (see Appendix 12) .
- 8.94 Overall, the topography of both sites slope down from a high point of 167m AOD (closest to Hoyland to the south) to its lowest points at 117m AOD (at the northern compartment), along the site's northern boundary to Shortwood. Dearne Valley Parkway segments the two sites at approximately 132m AOD to the west and 135m AOD to the east.
- 8.95 The proposed site is within flood zone 1 (an area at low risk of flooding).

Existing Vegetation

- 8.96 The north compartment ES15 consists of one irregularly-shaped field and a triangular woodland compartment which adjoins the A6195. The field is edged on the south-east side by mature hedgerows. The woodland compartment consists of typical native woodland species, which are well established and areas of scrub and grasses mainly along the PRoW. The woodland compartment screens views into the site from the A6195.
- 8.97 Adjacent to the northern compartment ES15, Shortwood and Hay Green lie to the north of the proposed site boundary. Within the Barnsley Local Plan (adopted 2019) it is noted that for designed employment site ES15, the development will be expected to: "consider the potential impact on the nearby Shortwood and Hay Green Local Wildlife Sites and include appropriate mitigation where necessary" (p.45).
- 8.98 The south compartment ES17 consists of five irregularly shaped fields, partially edged by hedgerows and interconnected woodland compartments. The woodland compartments mainly surround the site and irregular woodland belts enclose the fields. Similar to the north compartment ES15, the woodland consists of typical native woodland species, which are well established. The woodland screens views into the site from both the A6195 road corridor and from local dwellings.
- 8.99 The woodland within the site boundary has been calculated at approximately 13.8 hectares. The woodland belts are connected to further woodland compartments and tree belts outside the site boundary to the north, south and west.
- 8.100 Within Barnsley Local Plan (adopted 2019), it is noted that for the designated employment site ES17, the development will be expected to: "protect and retain the areas of woodland, species-rich neutral grassland, pond and stretches of older hedgerow" (p.46).

Public Rights Of Way (PRoW)

- 8.101 See Appendix 12 for Public Rights of Way (PRoW). There are numerous public footpaths that run across the site, the site is relatively well connected in terms of PRoWs.
- 8.102 Public footpaths in the north compartment ES15 include: Hoyland Nether UD 6, Hoyland Nether UD 5 and a bridleway Hoyland Nether UD 6. These public footpaths connect into each other, as well as connecting to further public footpaths to Birdwell, Worsbrough and public access routes along the dismantled railway. Hoyland Nether UD 6, connects to footpaths in the south compartment ES17 via Hoyland Nether UD 6 Bridleway, which is an underpass under the A6195.
- 8.103 Public footpaths in the south compartment ES17 include Hoyland Nether UD 1 and a bridleway Hoyland Nether UD 6. All footpaths connect to one another and continue to link into further footpath routes beyond the site boundary, Hoyland UD 6 links to Tankersley Commonside (via route Hoyland Nether UD 1 off site) and Hoyland Nether UD 1 links up to Hoyland Harshaw Lane/B6096 (via route Hoyland Nether UD 7 off site).
- 8.104 Within Barnsley Local Plan (adopted 2019), the public footpaths and bridleway running through the North compartment ES15 are designated as a Green Way, named as “Timberland Trail Tankersley NE to the Dove Valley Trail south of Worsbrough”. Green Ways are defined in the local plan as “paths & routes of mostly open character that provide links between housing, countryside & services” (Barnsley 2019).
- 8.105 Sections of the public footpath ‘Hoyland Nether UD 1’, which run along the boundary of the south compartment ES17, are also designated as Green Ways within the Barnsley Local Plan. These are characterised as “Timberland Trail Dove Valley Trail aspirational link over A6195 to Hawshaw Lane Hoyland” and links to the Green Way in ES15.
- 8.106 It is also noted within the Local Plan that for both Sites ES15 and ES17, it is expected that the development will “Protect and retain the Green Way, Public Footpaths and Bridleways, cutting through and along the periphery of the site, and make provision for them in the design of the layout” (p.45-46).

Statutory and Non-statutory designations

- 8.107 All related designations within the study area are mapped in Appendix 12. The site does not include any landscape designations, statutory and non-statutory, at either a national or local level. Therefore, in the context of the NPPF, it is not considered that the site comprises of ‘a highly valued landscape’ (NPPF footnote 9) as characterised by, for example, sites designated for their wildlife value (under the Birds and Habitats Directives or Sites of Special Scientific Interest), or sites designated for their beauty or for the preservation of settlement identity (such as Areas of Outstanding Natural Beauty, Heritage Coast, National Parks or Green Belt).
- 8.108 Within approximately 2.5km of the study area, there are located two Local Nature Reserves (LNR), including Worsborough Country Park (2.5km to the north of the site) and Potter Holes Plantations (2km south-west).
- 8.109 Within Barnsley Local Plan (adopted 2019), Worsbrough is designated as a Conservation Area, which is described as “areas of special historic character, which will be protected and improved” (Barnsley 2019) (no appraisal document is published).
- 8.110 Shortwood adjacent to ES15 is designated as Ancient and Semi-Natural Woodland and lies approximately 50m from the site’s northern boundary. It is noted in the Barnsley Local Plan

(adopted 2019) that any development of the site ES15 Shortwood Extension will be expected to “Consider the potential impact on the nearby Shortwood and Hay Green Local Wildlife Sites and include appropriate mitigation where necessary” (p.44)

Scheduled Ancient Monuments

- 8.111 Within the 2.5km study area, there is one scheduled monument Dovecote at Glebe Farm, Tankersley (1.1km south west of the site).

Listed Buildings

- 8.112 Within the 2.5km study area, there are 24 listed buildings of Grade I, Grade II and Grade III status. Hoyland Lowe Stand (tower), Grade II, is closest approximately 500m from site and St Peter’s Church, Grade II, approximately 600m to the south near compartment ES17. Haye Green Lane, Grade II, is more distant, located approximately 750m from the site. As noted earlier, Worsbrough is designated as a Conservation Area, within the Barnsley Local Plan (adopted 2019), and where nine listed buildings are located, eight of which are Grade II and one is Grade I.

Landscape Value

- 8.113 In terms of Landscape Value, the site is not subject to any National or Regional designations as shown in the Planning Designation (Appendix 12). The application site is therefore considered to be local in scale and, as such, it is appropriate to assess the Site’s landscape value and immediate context in terms of the guidelines set out in Box 5.1 of the GLVIA3 (page 84 GLVIA) and Table 8.1 of the methodology set out in of this report.
- 8.114 Condition / Landscape Quality: The proposed site is not designated for its beauty or quality. It is currently utilised for grassland and pioneer woodland planting, with PRow running through the proposed site and around its perimeter. Hedgerows are in a reasonable state of repair, albeit species seemed to be dominated by a single species Silver Birch. Overall the site shows some decline and its individual components are considered to be in a moderate state of repair. It is therefore considered to be of Medium quality and condition.
- 8.115 Scenic Quality: The Site is well-enclosed but has a more open aspect to the north east across farmland. Major road infrastructure which cuts through the two land parcels, whilst the surrounding commercial estates and large road junction between the M1 and A6195 exert urbanising influences over the site.
- 8.116 Rarity and Representativeness: The site comprises grassland and pioneer wooded areas adjacent to a settlement edge. Its features are characteristic of the wider area and are not considered to be rare or unusual therefore. The site is considered greenfield due to the former colliery on site (now remediated) and it is not considered ‘special’ by way of a designation. This is a landscape which contains characteristic, but not unique, landscape types or features and as such is considered Medium in terms of rarity and representativeness.
- 8.117 Conservation Interests: As a former colliery, the site contains pioneer woodland areas and grassland. There is an area of ancient woodland located to the north of the proposed site boundary but its impact on this area is considered to be minor adverse to negligible.
- 8.118 Recreation Value: The recreational value of the site consists of the PRow which runs through the northern land parcel. These routes are proposed to be diverted around the perimeter of the site and will still connect into the wider path network. There will be an unavoidable urbanising effect on the character of the routes through the site as their landscape context changes from

wooded areas and grassland to commercial estate. This impact can be partially mitigated through planting along the diverted PRoW. There are also PRoW which run along the site boundary and these will remain as existing. There are no other recreational opportunities within the proposed site. Therefore, it is anticipated that the development proposals are likely to have only a modest effect on the future amenity value of the path network.

- 8.119 **Perceptual Aspects:** Overall the site does not convey a sense of remoteness. It has an urban fringe character and is heavily influenced by the surrounding commercial estates and major road networks. Overall, the Site is considered to retain little perceptual values (wildness/ tranquillity etc) with detracting elements such as road noise and activities from the surrounding commercial properties. Therefore, it is considered to have a Low value in terms of tranquillity or remoteness.
- 8.120 **Cultural Associations:** There are no cultural associations identified for the site.
- 8.121 **Summary:** Given the evaluation provided above, the site is considered to have a Medium overall landscape value at a local level. Whilst practically every landscape is valued by those who live nearby, or is enjoyed by those who walk its footpaths etc, this landscape is neither rare nor unique, being representative of the wider area and in fair overall condition.

Landscape Susceptibility

- 8.122 In terms of the development proposals, it is clear that the site's key pioneer woodland character would be lost due to the proposed development. Its contribution towards the perceived separation of settlements would be impacted with the development seemingly merging the commercial estates along the A6195 and creating a continuous linear belt of large commercial premises.
- 8.123 To help mitigate the loss of both wooded areas and the sense of separation between settlements, it has been agreed with Barnsley Metropolitan Borough Council that the proposed development will create two plateaus to accommodate development. In order to reduce the visual impact of the overall development, the larger units will be located on the lower plateau. Mitigation planting will be used on the embankments to screen the units, reduce long-term visibility and limit potential impacts on the site and its immediate surroundings.
- 8.124 The main elements likely to cause potential harm to the landscape include (i) the removal of large areas of pioneer woodland, (ii) the creation of a new access onto the A6195 and (iii) development in proximity to the PRoWs crossing the site and their respective diversions. These will result in mainly localised effects.
- 8.125 It is considered that changes within the landscape of the type proposed are unlikely to affect the overall integrity of the wider landscape for two reasons: Firstly, intervisibility could be limited as a result of structural planting along the boundary of the proposed site and secondly, built form, consisting of large commercial units, is a common feature already within the landscape.
- 8.126 Against the criteria set out in Table 8.3 of the methodology, it is considered that the site has some ability to accommodate the proposed development without adverse consequences for the retention of the existing landscape baseline or the delivery of landscape planning policies and strategies.' As such, the application site has a Medium susceptibility to change of the type proposed.

Landscape Sensitivity

- 8.127 The area surrounding and adjacent to the application site around the M1 Junction 36 has experienced substantial change in recent years. Large scale road infrastructure, roundabouts, commercial warehouses and a lack of structure planting have reduced the overall value of the landscape in the broader area. This has resulted in a disturbed landscape, diminishing the underlying rural character and which has had an overall urbanising effect on local landscape character.
- 8.128 It is therefore considered that, when the Local Landscape value of Medium is combined with a Landscape susceptibility value of Medium, the resulting Landscape Sensitivity similarly carries a value of Medium in terms of the change of the type proposed.

Visual Baseline

- 8.129 The interaction of urban and rural features within the landscape such as vegetation, landform and buildings determine the potential for views towards the site. This assessment seeks to establish the visibility of the site from a representative sample of surrounding receptors (i.e. people who have a viewing opportunity over or towards the site).
- 8.130 The sensitivity of the viewpoints was evaluated by considering the value attached to specific views and the susceptibility of visual receptor to the type of change arising from the proposed development. The value of a view depends on a variety of considerations including any designations that apply to the view, its contribution to visual amenity and/or its cultural significance. The susceptibility to change of visual receptors depends on the occupation or activity of the receptor and the extent to which their attention is focused on the view and visual amenity.
- 8.131 A baseline analysis of the available views is set out below, with each identified receptor represented on the Viewpoint Location Plan (Figure 8.1 p69) and table 8.1, p81). Viewpoints 1 to 18 have been included within the Assessment section of this report to provide a representative sample of views available to identified receptors.
- 8.132 Where appropriate, receptors have been grouped and a representative viewpoint selected to demonstrate visibility.
- 8.133 A photographic survey took place on the 29th December 2019, when vegetation was not in leaf. The survey was undertaken in clear weather conditions, with good visibility using a Nikon D7200 Digital SLR for all photography. A 35mm focal length was applied. Photographs were taken in accordance with guidance set out in Photography and Photomontage in Landscape and Visual Impact Assessment, Landscape Institute - Advice Note 01/11.

Receptor Sensitivity

- 8.134 Receptors encompass residents, users of Public Rights of Way, views from highways and rail passengers. In overall terms, the first two categories are considered to be of higher sensitivity than the latter two due to the prolonged and or proprietary interest in the view, although the context of individual receptors can have a bearing on their sensitivity. The main users or visual receptors are considered in more detail below and individual assessed within Appendix 12.

Residential – High Sensitivity

- 8.135 Generally occupiers of residential properties orientated towards the development are classed as being of greater sensitivity and occupiers of properties with oblique views of the development

and/or not orientated towards the development are of lesser sensitivity. An individual assessment of each receptor can be found within Appendix 12.

Viewpoint	Receptor Type	Location	Sensitivity to change
1	Residential	Worsborough Conservation Area	High
2	Residential	Hay Green Lane and Herons Way	Medium (due to the existing visual impact of warehouses on adjacent site)
3	PRoW User (Recreational)	Worsborough UD 40	Medium to High
4	Residential	Lynham Avenue	Medium to High
5	Residential	Tinker Lane	High
6	Residential	Hoyland Road	Medium
7	Residential	Hawshaw Lane	High
8	PRoW User (Recreational)	Hoyland and Nether UD 7 and 1	High
9	Residential	Upper Hoyland Road (south)	High
10	Residential	Upper Hoyland Road (north)	Medium
11	Residential	Dhortland Villas	Medium to High
12	Residential	Property at PRoW Worsborough UD 31	High
13	PRoW User (Recreational)	Worsborough UD 31	High
14	Residential	Blacker Hill	High
15	Residential	Pilley	High
16	Recreational	Wentworth Castle Gardens	High
17	Vehicular road users	Rockingham Roundabout	Low
18	Vehicular road users	Shortwood Roundabout	Low

Table 8.1 – baseline viewpoint analysis

Public Rights of Way (PRoW) – High Sensitivity

- 8.136 There are numerous PRoWs passing across the site, and in the surrounding areas. These routes range from well used, well maintained connections to areas that are either overgrown or were inaccessible during the site visit due to waterlogged ground.
- 8.137 Each viewpoint photograph was taken in locations where the proposed site was judged to be the most visible.
- 8.138 Generally PRoW to the north of the proposed site in the areas around Birdwell and Worsbrough were in better condition and used more for recreational activity. Routes to the south of the site in the areas around Hoyland were less maintained and seemed to be used less frequently.
- 8.139 People engaged in outdoor recreation whose interest is likely to be focused on the landscape are considered highly sensitive to change of the type proposed.

Road Users – Low Sensitivity

- 8.140 These are considered to be road users driving or cycling along the A6195. Viewpoints along this route have been selected on the roundabouts within close proximity to the proposed site. The A6195, leads from the M1 junction 36 from east to west and serves as part of a link road to the A1(M), to the east. The A6195 is a busy dual carriageway, with a current national speed limit of 70 mph.
- 8.141 Due to the volume and type of traffic (heavy goods), permitted traffic speed and lack of tranquillity along the A6195, receptors using these routes are classed as being of low sensitivity to change. Views into the proposed site are, on the whole, fleeting and filtered by intervening vegetation.

Visual Baseline

- 8.142 Visibility towards the site from the north and south is limited largely to those receptors located in close to medium proximity to the site. The nature of the topography, vegetation and existing buildings limit wider views from the northern and southern direction
- 8.143 Visibility towards the site from the east and west is more open due to the rising topography and the A6195 creating a visual corridor. Views from east and west will already have sight of industrial and commercial premises along the A6195. More long-distance views are afforded to the west across from the M1, but the proposed site is within the background of existing large commercial premises and major road networks.
- 8.144 There are clear views of the site from the A6195 looking north and south. This road is a dual carriageway with no footways and visual receptors will be limited to vehicular users. It is considered, however, that motorists travelling at speeds of around 70 mph along the dual carriageway would not be characterised as sensitive receptors.
- 8.145 The greatest level of visibility is experienced from the two PRowWs that cross the site. Viewpoint photography was taken from the two footpaths towards the application area from outside the site boundary to allow the proposals to be seen in their wider context.
- 8.146 Further afield the combination of existing development, topography, and woodland creates overlapping layers of screening which prevent significant viewing opportunities from the surrounding more sensitive residential receptors. When views are afforded to the site from these locations, they are within the context of views of existing commercial development which will be similar in scale and character to the proposed development.
- 8.147 Overall, it is assessed that the site has a modest visual envelope considering the scale of the proposed development, with surrounding vegetation and landform screening many of the views towards site. The removal of a considerable amount of vegetation within the proposed development makes creating a definitive assessment on visual envelope difficult as the site boundaries blend into the surrounding woodland. This is coupled with the erratic nature of the localised landform also creates challenges to the visual assessment from mid distance and wider views.

Visual Value

- 8.148 Judgments regarding the value attached to views consider whether or not views are unique, available from or to areas designated for their beauty or historic interest, and / or have a cultural association (where they are referenced in guidebooks or tourist information, include particular landmarks such as a church steeple or geological formation, etc.).

8.149 Selected viewpoints are illustrated in Figure 8.1 p99).

Visual Baseline: Views and Visual Amenity

Zone of Theoretical Visibility (ZTV)

- 8.150 ZTV (Appendix 12), demonstrates the potential visibility of the proposed scheme given the constraints of topography, built form and vegetation. The proposed development will result in clearing a substantial amount of planting within the site, the ZTV will produce a model based on the ground conditions and built form of the data (2019), against the proposed built form development. The ZTV will not pick up views which could be opened up through the removal of the vegetation on site.
- 8.151 The ZTV is an indicative guide based on Light Detection and Ranging (LIDAR). This uses an airborne mapping technique, employing a laser to measure the distance between the aircraft and the ground. Up to 100,000 measurements per second are made of the ground, allowing highly detailed terrain models to be generated at spatial resolutions of between 25cm and 2 metres. The spatial reference of the data on this model was 1 metre.
- 8.152 The Environment Agency's LIDAR data archive from which this model data was sourced contains digital elevation data derived from surveys carried out by the Environment Agency's specialist remote sensing team. The dataset is a Digital Surface Model produced from the signal returned to the LIDAR (which includes heights of objects, such as vehicles, buildings and vegetation, as well as the terrain surface). The source of the data is the latest available (2014); the mapping context and resulting viewshed analysis is open to variation with changes to the context of the urban environment over time.
- 8.153 ZTV should be used as a guide. It should be noted that the model takes into account only the height of a proposed structure but not the overall form; it does not take into account the location of windows within affected buildings or limitations of sight and context. Conditions on the ground may differ to the model.
- 8.154 The ZTV has been modelled through data purchased from Bluesky Limited. Attribution statement: © Bluesky Limited copyright and/or database right 2019. All rights reserved.
- 8.155 A further walkover survey by a landscape architect, as identified within the methodology, was used to identify hitherto unrecorded views and was adopted to conclude the final scope.

Identification of Likely Effects

Landscape effects

- 8.156 This section considers the landscape effects that would likely arise as a result of the development.

Short term effects

- 8.157 Short term landscape and visual effects would result from alterations to the landscape during the construction of the development. These effects would be temporary and restricted in nature. Effects would be limited to the site and / or off-site highway works associated with modifications to site access and service provision.
- 8.158 Key landscape and visual effects resulting from construction include:

- The loss of arable land;
- The stripping and storage of topsoil;
- Service connections to the site;
- The loss of boundary hedgerow to form a new access with the required visibility splays
- The storage of materials and installation of a contractor's compound;
- Temporary traffic and pedestrian management arrangements;
- Traffic movements into and out of the site;
- Views of construction machinery;
- The construction of new buildings, infrastructure and the planting of public open spaces and structural landscape areas;
- Works within the carriageway along A6195; and
- Lighting associated with construction and security.

8.159 Operations that would result in the greatest effects on landscape would be in those areas that are used for the longest duration such as the site access and contractor's compound and / or operations such as the stripping and storage of topsoil within mounds or bunding. It is acknowledged that construction noise, vehicle movements, etc would provide a degree of increased disruption to the landscape and a temporary visual intrusion, especially to receptors in close proximity to the site.

Effects on Landscape Character – during construction

8.160 National Character Area 38: Nottinghamshire, Derbyshire and Yorkshire Coalfield covers a substantial area and development within the site will only affect a very small part of the NCA. Moreover, intervisibility with the wider area is limited due to landform and intervening vegetation. As such, effects on the character of the landscape will be localised to the site and to its immediate context. Therefore, it is considered that the proposed development will result in a Low Adverse magnitude of change to NCA 38 during construction.

8.161 Landscape Character Area E4: Similarly, the site covers only a small part of the LCA and it is anticipated that none of the LCA's defining characteristics will be lost. Whilst there will be substantial removal of the wooded area within the site and localised earthworks, the proposed development will have little effect on the already fragmented and erratic landform. The proposed development is considered to result therefore in a Low Adverse magnitude of change on the LCA.

8.162 The Site Itself: Construction activities will have an increasingly urbanising influence over the site. Plant movement into and out of the site will cause increased disruption, with earth-moving and construction activities altering the character of the landscape. The commercial development will inevitably have an urbanising effect on the site's landscape character. This impact will be localised to the site itself and its immediate context and will be temporary in nature. Overall, it is anticipated that the magnitude of change will be Medium adverse and be of Moderate significance.

Effects on Landscape Character - Operation

- 8.163 Long term effects upon landscape character and resources arising from completion of the scheme will include (but are not limited to):
- Eight large commercial units;
 - Service Yards;
 - Substantial commercial scaled lighting;
 - Car Parking;
 - Large pond features for drainage;
 - New road infrastructure, including footways and restricted and / or sensitive street lighting;
 - Proposed roundabout on
 - Dearne Valley Parkway;
 - Embankments and earthworks; and
 - Mitigation planting.
- 8.164 These changes would be permanent in nature and would result in a change of character from urban/rural fringe to a commercial real estate. This would serve to extend the existing commercial premises from the M1 Junction J36 to Barnsley Road.
- 8.165 NCA 38: As with construction impacts, only a very small part of NCA 38 will be affected by the development and no key characteristics will be lost. Operational impacts are considered to be of a Low Adverse magnitude which is therefore considered to result in impacts of Minor Adverse significance.
- 8.166 LCA E4: With regard to impacts at a regional level, the character of the LCA will experience only modest changes. As with NCA 38, only a very small part of these LCAs will change. Limited wider intervisibility within the character areas will result in a Low to Medium Adverse magnitude which is therefore considered to result in impacts of Minor to Moderate Adverse significance to the Character area as a whole.
- 8.167 The site Itself: The site has already been affected by the recent construction of commercial buildings similar to the proposed scheme, both within and local to the site. This construction activity has already had an urbanising effect on the landscape and so the magnitude of change is anticipated to be High. The existing large commercial buildings within the local context have already served to reduce the site's landscape value. Therefore, it is assessed that overall the magnitude of change within the site will be Medium and the associated impacts to be of Moderate significance.

Visual effects

- 8.168 This section considers the amenity of potential visual receptors, i.e. people with a view over or towards the site. Table 8.8, along with the Visual Assessment Summary provides a tabulated assessment of the visual effects that would likely result from the emerging development proposals.

- 8.169 The assessment identifies a representative sample of receptors in order to evaluate the potential effects of development across the area. The assessment goes on to determine the sensitivity of each receptor, the nature of their views, and the magnitude of change predicted within their view by using selected representative viewpoints for each receptor.
- 8.170 The viewpoints shown on Figure 8. 1 p99 are selected to give a representation of the area's overall visual resource. While not exhaustive, they clearly illustrate the extent of visibility that the site is afforded to the associated receptors.
- 8.171 As noted all views were taken from the ground, during clear conditions on 29 November 2019 and 06 December 2019. Vegetation was not in leaf representing the worst-case screening effects during winter months.
- 8.172 The Methodology considers impacts of moderate or major significance to be material in the decision-making process. As such, impacts of moderate or major adverse effect are to be mitigated where practicable to reduce impacts to an acceptable level.
- 8.173 Selected viewpoint locations have been determined through a dialogue with the Council and client, whilst using the ZTV and professional judgment on site.
- 8.174 Selected Viewpoints are identified on Figure 8.1 p99 and detailed in Appendix 12.

Effects on Visual Amenity - Construction

- 8.175 Construction activities would result in temporary, phased and adverse impacts on the viewing experience of all visual receptors that have views of the works. The magnitude of change in the visual environment is considered to be medium adverse when the development is viewed as a whole, although from each particular receptor the magnitude of change would vary, being greater where construction activities are directly visible and lower where views are oblique or partially obscured for example.
- 8.176 Careful access control, restrictions on vehicle movements at particular times, lighting at night and hoarding will need to be carefully considered, when working in close proximity to residential receptors. It is of note that in some areas existing vegetation surrounding the proposed site creates a vegetative screen around the proposed development.

Effects on Visual Amenity - Operation

- 8.177 Impacts on the viewing experience of all visual receptors that have views of the development during its operational phase would be permanent and adverse. When the scheme is considered as a whole, the magnitude of change in the visual environment is considered to be medium adverse in year 0 before mitigation planting becomes established. Affected receptors include residential, road users and recreational users of local PRoW, from all directions and at varying distances from the site. Receptors would witness a green site, composed of arable farming and woodland, substituted with the development, realising a range of slight to moderate adverse effects.
- 8.178 Receptors include site facing residential properties; including those to the north on Worsbrough Road, Church Lane and St Mary's Gardens, those to the west including Hay Green Lane, Rockley View and The Avenue, those within the vicinity of Lynham Lane, Tinker Lane, Hoyland Road and Hawshaw Lane to the south, and those to the east including Upper Hoyland Road. Affected recreational receptors include users of local PRoW, such as UD1, 7, 31 and 40. Road users will view the site and development from many locations within the study area, including from Dearne Valley Parkway.

Viewpoint	Receptor Type	Sensitivity to change	Magnitude of Change	Significance of Change
1	Residential	High	Medium adverse reducing to Low Adverse at year 15	Moderate adverse reducing to Minor Adverse at year 15
2	Residential	Medium (due to the existing visual impact of warehouses on adjacent site)	Medium adverse	Moderate adverse
3	PRow User (Recreational)	Medium to High	High adverse reducing to Medium adverse at year 15	Moderate Adverse
4	Residential	Medium to High	Medium adverse reducing to Low adverse at year 15	Moderate Adverse reducing to Minor adverse at year 15
5	Residential	High	Low adverse	Minor adverse
6	Residential	Medium	Low adverse	Minor adverse
7	Residential	High	Medium adverse reducing to Low adverse at year 15	Moderate adverse reducing to minor adverse at year 15
8	PRow User (Recreational)	High	Medium adverse reducing to Low adverse at year 15	Moderate adverse reducing to minor adverse at year 15
9	Residential	High	Medium adverse reducing to Low adverse at year 15	Moderate adverse reducing to minor adverse at year 15
10	Residential	Medium	Medium adverse reducing to Low adverse at year 15	Moderate adverse reducing to Minor adverse at year 15
11	Residential	Medium to High	Medium adverse reducing to Low adverse at year 15	Moderate adverse reducing to minor adverse at year 15
12	Residential	High	Low adverse	Minor adverse
13	PRow User (Recreational)	High	Low adverse	Minor adverse
14	Residential	High	Low adverse reducing to negligible in year 15	Negligible
15	Residential	High	Medium adverse reducing to Low adverse at year 15	Moderate adverse reducing to minor adverse at year 15
16	Recreational	High	Low adverse	Minor adverse
17	Vehicular road users	Low	Medium adverse	Moderate adverse reducing to Minor adverse at year 15
18	Vehicular road users	Low	Medium adverse reducing to Low adverse at year 15	Minor adverse

Table 8.8: Visual Assessment Summary Table

- 8.179 For the vast majority of receptors, it is anticipated that the effects would reduce incrementally by year 15, as planting associated with the development establishes, to screen and soften the majority of views towards the site. The magnitude of change would vary at each location, being greater where large areas of the built development remain visible and lower where views are partial or filtered between intervening landform and vegetation.
- 8.180 It is anticipated that this will reduce incrementally by year 15 to overall impacts of moderate adverse when mitigation planting within the development has established, screened and softened views. The magnitude of change would vary at each location, being greater where large areas of the built development are visible and lower where views are partial or filtered between intervening landform and vegetation.
- 8.181 Two of eighteen viewpoints (Viewpoint 2 and 3) are judged to appreciate a moderate adverse effect upon implementation that would remain once mitigation planting has established, as this planting is predicted to have limited effect due to the topography of the intervening landform creating expansive views over the site. Viewpoint 2 represents residents in properties on Hay Green lane and Herons Way and Viewpoint 3 represents users of PRoW Worsbrough UD 40.
- 8.182 Overall it is noted that the proposed development will result in a loss of wooded area from the site and increase the visual urbanising character along the A6195. It should however be noted that unlike previous developments, specifically Shortwood Business Park, the proposed development will have a robust planting mitigation strategy and be sited at lower levels within the landscape. This should limit the overall visual impact of the scheme in comparison with surrounding developments of a similar type.

Significance of Identified Effects

- 8.183 The Methodology considers impacts of moderate or major effect to be significant and therefore material in the decision-making process. This section identifies such anticipated effects from the development.

Landscape – significance of Identified Effects

- 8.184 Construction activities will have an increasingly urbanising influence over the site, realising a moderate adverse effect and is of significance.
- 8.185 Throughout operation, the landscape resource of the site will incur moderate adverse effects, which are of significance, borne from the urbanising effect of the development.

Visual – significance of Identified Effects

- 8.186 Visual effects consider the visual receptors i.e people with a view over or towards the site. Table 8.8 Visual Assessment Summary and Figure 8.1 p99 illustrates and assess the 18 selected viewpoints (Appendix 12 is also of reference).
- 8.187 During construction the majority of receptors would appreciate temporary moderate to major adverse effects, which are considered significant.
- 8.188 Post implementation, receptors appreciating moderate adverse effects, of significance, include residential properties on a number of dwellings on Worsborough Road, Church Lane, St Mary's Gardens, Hay Green lane, Lynham Avenue, Hawshaw Lane, Upper Hoyland Road, Rockley View and The Avenue. Moderate adverse effects related to PRoW include views from UD40, UD7 and UD1. Road users experiencing moderate adverse views of significance would be

those travelling the Dearne Valley Parkway and those within roads associated with residential areas.

- 8.189 Once the scheme and associated planting is mature, the only receptors experiencing significant effects relate to Viewpoint 2 and 3; the residents on Hay Green Lane and Herons Way and PRoW users on UD 40.
- 8.190 Two of eighteen viewpoints (Viewpoint 2 and 3) are judged to appreciate a moderate adverse effect upon implementation that would remain once mitigation planting has established, as this planting is predicted to have limited effect due to the topography of the intervening landform creating expansive views over the site. Viewpoint 2 represents residents in properties on Hay Green lane and Herons Way and Viewpoint 3 represents users of PRoW Worsbrough UD 40.

Cumulative Impacts

- 8.191 The previous sections written in Chapter 8, solely assess the proposed development of ES15 and ES17 and do not assess any additional proposed developments within the vicinity of the site and their potential cumulative impact. This section assesses the likely significant effects of this development upon the landscape when considered in the context of the potential development site at Hoyland North.

Landscape Effects

Effects on Landscape Character

- 8.192 The proposed site as outlined above sit within the Local Landscape Character Area E Settled Wooded Farmland. The key characteristics of this area are stated as a diverse range of land use and urbanising influence.
- 8.193 Once implemented, the allocations would substitute the majority of the existing defining features, including the vegetation, landscape pattern and pastoral use found presently. These features would be replaced with residential and commercial development with associated public open space.
- 8.194 As stated in the 2016 review of the Landscape Character area 'E: Settled Wooded Farmland' (p21): Despite including the characteristics typical of the settled wooded farmland landscape, the character area includes extensive urban development, former and modern industrial uses and major roads'.
- 8.195 It is assessed that the proposed wider development, considered alongside the development of the Site and existing neighbouring land uses, would be in keeping with the revised assessment made in 2016 about the landscape character. The Site itself is consistent with the character of the Hoyland North Masterplan Framework and adjoining land uses and represents an appropriate extension to it.

Visual Effects

- 8.196 The fields allocated in the masterplan provide a gap in development from east to west along the A6195, from existing residential and Ashroyd Business Park in the east, to residential development in Hoyland Common and infrastructure of junction 36 in the west. Similarly, the fields provide a gap in development from the settlements of Birdwell and Worsbrough in the north-west, to Hoyland and Hoyland Common in the south-east.

- 8.197 The Hoyland North Masterplan proposal allocates the fields east to south of ES17 to housing, with public open spaces allocated in HS64 (cricket pitch, SUDS etc). This development would inherently have an urbanising effect, removing the visual gap of open landscape in between development (as noted in the Borough of Barnsley Local Landscape Character Assessment 2002 (p.173 – 174) (paragraph 8.76).
- 8.198 In terms of views, many views of the development from the south and east will be screened or filtered by the Hoyland North Masterplan Framework development. These views would be replaced by housing, which encloses two sides of the site and offers a continuation of residential use from these directions.

Effects on Residential Receptors

- 8.199 The urbanising effect of the wider masterplan would particularly affect the viewpoints 5, 6, 7, 9 and 15 all being residential receptors assessed within the Visual Assessment of Gateway 36 (table 8.8 and Appendix 12). The majority of anticipated views towards the site and the distant countryside would be substantially replaced by residential development, providing a natural extension to the existing land use, containing views from the receptor and moving the boundary and perception of the urban edge.
- 8.200 From Viewpoints 5, 6, 7 and 15 and the receptors that they represent for the period covering construction up until Year 15, the magnitude of change within the area is deemed to be medium to high and the effect is considered to be major adverse and significant. From Year 15, once planting is mature, the magnitude of effect will be between medium and low and the effect will be diminished to moderate adverse, but still significant.
- 8.201 Views of the wider masterplan from residential receptors north of the A6195 will be screened by the proposed development with ES15 and ES17 and there would be no change to the ascribed assessment values.

Effects on Recreational Routes

- 8.202 Views from recreational routes are represented by Viewpoints 3, 8 and 13. These views are transient in nature along the route and in areas views of the wider masterplan may be apparent alongside the development of the Site. Views of the wider masterplan from the location of the captured photography for Viewpoint 3 and 13 are anticipated to be screened by the proposed development in ES15 and ES17. Therefore there is no cumulative effect from these locations or from locations nearby.

The view from Viewpoint 8 will be altered and the location of this viewpoint will be from within proposed residential development. This will result in a notable change in the setting of the view and would be a large and adverse effect that will be significant.

Effects on Roads

- 8.203 Viewpoints 17 and 18 are from vehicular road users. Views to the proposed wider masterplan from Viewpoint 18 are limited and it is anticipated that the development proposed within ES15 and ES17 will screen the wider masterplan. Viewpoint 18 will see a portion of the proposed residential development but due to the limited aspect of the view and being transient in nature it is not anticipated to be significant.

Summary

- 8.204 The areas to the north of the A6195 will be screened by the development or will not be seen in context with the development in ES15 and ES17 due to the scale of the commercial units in the area screening views. From the north of the site, there would be minimal cumulative effect, which is not significant.

Mitigation and Monitoring Measures

- 8.205 Mitigation measures are important to ensure that adverse effects predicted during construction and occupation of the proposed development are minimised and that the proposed development fits into the landscape as sympathetically as possible. Mitigation measures are based on the findings of the impact appraisal, specifically where impacts are classified as either 'Moderate Significance' or 'Major Significance'.

Short Term Mitigation

- 8.206 The following mitigation measures are suggested throughout the construction of the development:
- 8.207 Site hoarding should be carefully considered to restrict views of the works from receptors in close proximity. This should include the proposed rerouted PRowS which currently run through the site; PRow Hoyland Nether UD 6#1 and Hoyland Nether UD 5 in compartment ES15 and, PRow Hoyland Nether UD #1 in compartment ES17. Regular windows set within hoarding may enable people to view the works in a controlled fashion should the works be of interest to passing walkers.
- 8.208 Lighting of the site will be restricted to agreed working hours and those necessary for security, to keep light pollution to a minimum.
- 8.209 All machinery and materials will be stored tidily during the works and kept away from the boundaries of existing residents.
- 8.210 Vehicle movements into and out of the site are presumed to be from the A6195. Therefore, it is presumed that no residential roads will be used for accessing the site during development. As detailed in the illustrative masterplan, it is assumed that ES15 will be accessed by a new access road and proposed roundabout on the A6195 and that ES17 will be accessed from Shortwood Roundabout.

Long Term Mitigation

- 8.211 The following mitigation measures are suggested to reduce the long term permanent impacts that proposed development would have on the landscape character of the area and the visual amenity of surrounding receptors:

Green Infrastructure

- 8.212 The proposed plan will result in a net loss of woodland on site. It is anticipated however that this net loss will be partially mitigated with new native deciduous tree planting. This will seek to use species which are in keeping with the local landscape character, which will screen more effectively the development from the identified locations and ensure the new development is incorporated into the landscape in as sensitive a way as possible.

Vegetative Screening specifically

- 8.213 This will be used along boundary edges and at strategic locations within the site to limit views of the site from more sensitive receptors and viewpoints. This will include screening along the boundary edges of the A6195 which will reduce views from the road and between development parcels ES15 and ES17. New screening on the southern, western and eastern boundary on the embankment will reduce visual permeability for residents in Hoyland Common and Hoyland.
- 8.214 While this new woodland planting will not create a total screen, it will create a layering effect, with new woodland areas adding to the sequence of urban and landscape features along the existing urban edge of Barnsley and Hoyland. Supplementary boundary planting in ES15 along Shortwood will also buffer the ancient woodland.
- 8.215 The proposed development will use materials, architectural detailing and finishes in keeping with the adjacent commercial dwellings.
- 8.216 Buildings will be set back from the site boundary. The landform within the proposed site boundary will be terraced and reformed to accommodate the commercial units. Generally, this results in the commercial units being cited at lower levels than the existing landform.

Lighting

- 8.217 Should external lighting be required, the Scheme is to include a range of measures which control the use of artificial light without detriment to the lighting task. The need for lighting would be carefully assessed and all lighting would be designed in accordance with guidance issued by the Institute of Lighting Engineers (ILE) in order to minimise light pollution;
- 8.218 Asymmetric light fittings that reduce light emitted upwards would be used. Light covers could minimise the amount of light that is lost upwards or sideways where it is unwanted. Use of reflective shields could reflect more of the light downwards, allowing a lower wattage bulb to be used to achieve the same luminance; and
- 8.219 Glare would be reduced by ensuring that the main beam angle of lights directed towards any potential observer is not more than 70 degrees. Within locations enabling higher mounting heights, lower main beam angles would be used to reduce glare further.
- 8.220 At all times the minimum amount of lighting necessary to illuminate the area would be used. There are published standards for lighting tasks which the proposed development would adhere to. The Outdoor Lighting Guide published by the ILE and Lighting in the Countryside: Towards Good Practice published by the ODPM (1997) provide guidance; and
- 8.221 Locations of lighting would be appropriately designed to reduce light spill and glare.

Summary

- 8.222 The proposed development is for a warehouse style development on land north and south of the A6195 in South Barnsley. The two sites are designated for employment in Barnsley Local Plan (adopted 2019) and referenced as ES15 and ES17.
- 8.223 The site is on a former colliery which has since been remediated with established woodland planting and grasslands. The site is therefore considered to be a greenfield site. A number of business parks and recent commercial developments are located along the A6195, from the M1 Junction 36. The area around J36 has seen major infrastructure works which have affected both the landscape and visual setting of the site and the surrounding landscape.

- 8.224 The proposed development site will be located in between these existing developments, on both the north and south side of the A6195. It is anticipated that the proposed development will be seen as an extension of the surrounding business and commercial premises and it is not introducing a wholly new element into the landscape. The site is of low tranquillity due to the proximity of the A6195 and M1 and associated constant road noise. The site and the surrounding landscape are seen as an urban edge transition and have seen numerous changes and continued urbanisation over the last 10 years.
- 8.225 The landscape value is judged to be of medium quality condition and is not considered to be rare or unusual. The site has no statutory or non-statutory designations. The development will result in a net loss of established woodland, which will have an effect on both the landscape character and visual amenity.
- 8.226 The undeveloped compartments of ES15 and ES17 currently provide a source of visual separation between the business parks along the A6195 and between the villages of Birdwell and Hoyland which is provided by established woodland compartments. The proposed scheme will result in a net loss of these wooded compartments. However, the landscape strategy of woodland screening will provide partial and filtered screening to the site once established.
- 8.227 It is judged that the development would incur a low adverse effect on the character of the wider landscape during construction, but a moderate adverse effect upon the site itself, which is considered significant. Similarly, during operation, the urbanising effect of the proposed scheme would realise an insignificant effect upon the local landscape character area beyond the site, due to the overall scale of intervisibility and the proposals being in line with the surrounding developments but would have a moderately adverse effect on the site itself, which is significant.
- 8.228 Following the detailed assessment of both the landscape and visual receptors, it is considered that many of the viewpoints from the public rights of way, roads and residential receptors would be exposed to moderate adverse and significant effects.
- 8.229 The majority of receptors, would experience diminished effects over a 15-year period, appreciating only slight adverse effects once associated planting had matured. Viewpoints 2 and 3, representing residents on Hay Green Lane and Herons Way and PRow users on UD 40, would retain moderate adverse effects, as both experience expansive, elevated views across the proposed site. Therefore, once established, only these two receptors would continue to experience significant effects.
- 8.230 The representative viewpoints demonstrate that the majority of views into the site are currently seen within the context of the existing commercial units and that once mitigation planting becomes established, the identified impacts will not be significant.
- 8.231 When considered alongside the Hoyland North Masterplan Framework, it is judged that there are no significant cumulative effects.
- 8.232 In summary, significant effects from the development to landscape resource and character are isolated to the site itself, due to the change of land use and loss of woodland structure. Within the context of the wider landscape character the development is not considered significant. The local setting already accommodates similar forms of development and the proposals would be congruous with such existing land use and appropriate to the urban edge transition and future extensions represented by the Hoyland North Masterplan Framework.
- 8.233 Due to the scale and nature of the proposed development, visual impacts will be created. Initially, it is deemed that many of the viewpoints from public right of ways, roads and residential

receptors would appreciate moderate adverse and therefore significant effects, albeit the site from many locations would typically be seen within the context of similar development, to which the proposals would form a natural extension. Once mitigation planting has matured, however, the extent and number of effects would be substantially reduced. Residual significant effects would be felt by residents upon Hay Green Land, Herons Way and PRow users on UD40, all located within a small portion of the study area. The vast number of receptors within the study area would not experience a long term significant effect from the development.

- 8.234 Overall, judged alongside the robust mitigation strategy prescribed, it is considered that the site has the capacity to accommodate the nature and extent of the proposed development.

Cushman & Wakefield
St Paul's House
23 Park Square South
Leeds LS1 2ND

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