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**PLANNING & DEVELOPMENT
DIVISION**

Hodgetts Estates

LAND NORTH-EAST OF JUNCTION 10 M42, NORTH WARWICKSHIRE

Environmental Statement Volume 2: Main Statement





Hodgetts Estates

LAND NORTH-EAST OF JUNCTION 10 M42, NORTH WARWICKSHIRE

Environmental Statement Volume 2:
Main Statement

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WSP

8 First Street
Manchester
M15 4RP

Phone: +44 161 200 5000

WSP.com



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1

INTRODUCTION

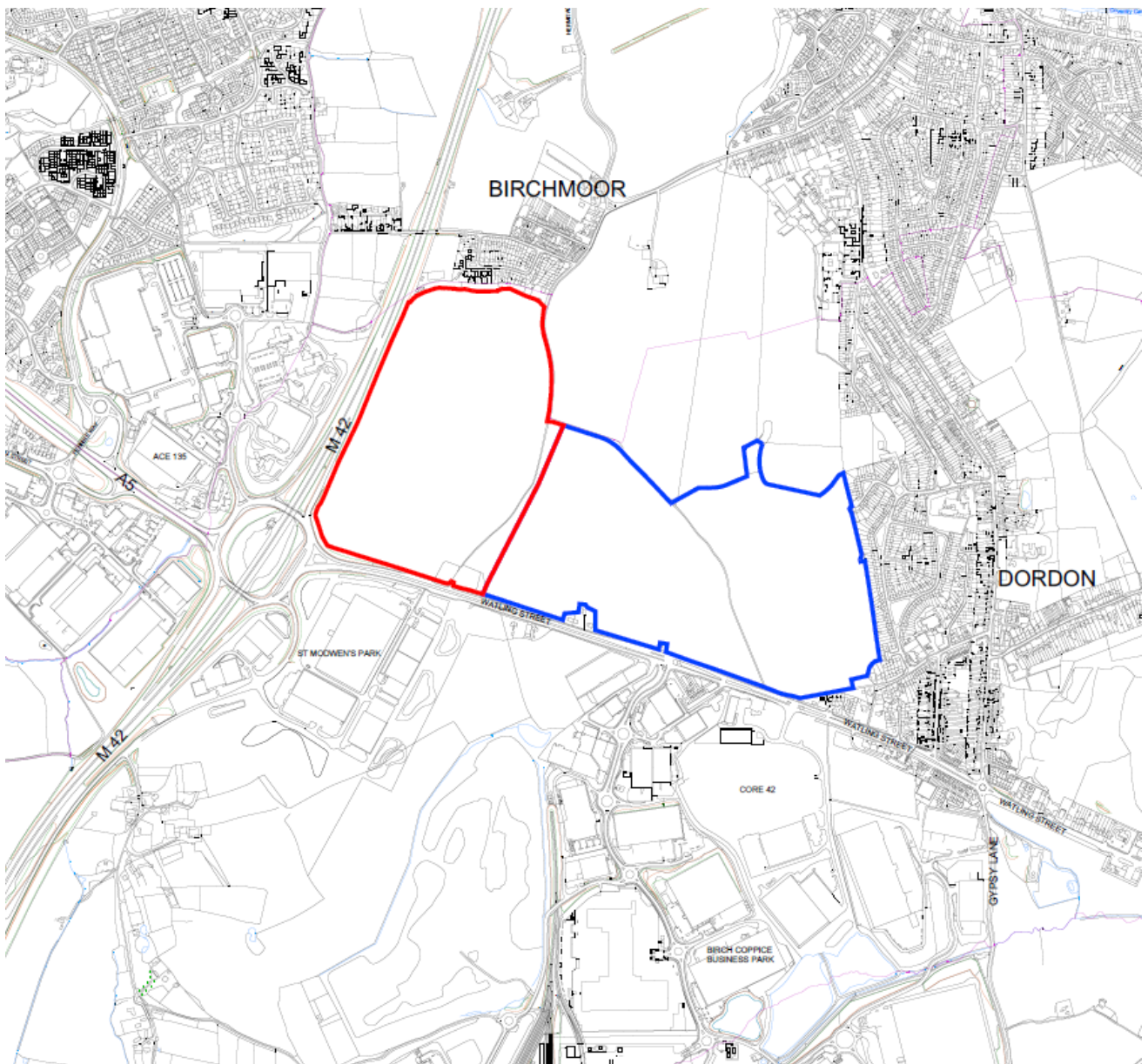


1 INTRODUCTION

1.1 BACKGROUND

1.1.1. Hodgetts Estates (herein referred to as 'HE' or 'the Applicant') is seeking to obtain outline planning permission (with access approved in full, all other matters reserved) for a major mixed employment development, an overnight lorry parking facility and ancillary infrastructure (herein referred to as the 'proposed development') on land at the north-eastern quadrant of Junction 10 of the M42 motorway, North Warwickshire ('the site'). The location is identified in the plan extract below and described further in **Chapter 2: The Existing Site**.

Image 1-1 - Site Location Plan



- 1.1.2. This Environmental Statement (ES) supports an outline planning application seeking permission for: *‘Outline planning permission for development of land within Use Class B2 (general industry), Use Class B8 (storage and distribution) and Use Class E(g)(iii) (light industrial), and ancillary infrastructure and associated works, development of overnight lorry parking facility and ancillary infrastructure and associated works. Details of access submitted for approval in full, all other matters reserved.’*
- 1.1.3. The ‘Area of Interest’ comprises a total of circa 38.87ha of arable farmland at the north-eastern quadrant of junction 10 of the M42 motorway (J10 M42) near Dordon, North Warwickshire.
- 1.1.4. A plan showing the extent of the Area of Interest for the purposes of this ES is contained at **Figure 1.1 of Volume 4**. Two different ‘areas’ are indicated, as follows:
- The development site (circa 32.36ha); and
 - Off-site areas for potential landscape and visual mitigation, biodiversity enhancements and footpath/cycleway enhancements (circa 6.51ha).
- 1.1.5. Further details on the proposed development are presented in **Chapter 3: Description of the Proposed Development**.
- 1.1.6. The Environmental Statement (ES) is the written output of the Environmental Impact Assessment (EIA) process which has been undertaken in accordance with the [Town and Country Planning (Environmental Impact Assessment) Regulations 2017 and the Town and Country Planning (Development Management Procedure, Listed Buildings and Environmental Impact Assessment) (England) (Coronavirus) (Amendment) Regulations 2020 (**Ref. 1.1**) (referred to as the ‘EIA Regulations 2017’). The ES Main Report is one of the supporting documents submitted to the determining planning authority, in this case North Warwickshire Borough Council, in support of the planning application.
- 1.1.7. This chapter outlines the legal framework and structure of the ES report and supporting documents. A breakdown of the information required by the EIA Regulations 2017 is provided in **Table 1-1** alongside guidance on the location of this information within this report.
- 1.1.8. WSP has been commissioned by the Applicant to carry out, with input from external consultants, the EIA in support of the outline planning application. This has incorporated technical input from a number of consultants, as outlined in **Table 1-2**.

1.2 DEFINITION OF ENVIRONMENTAL IMPACT ASSESSMENT

- 1.2.1. The term ‘environmental impact assessment’ describes a procedure that must be followed for certain types of projects before they can be given ‘development consent’. The procedure is a means of drawing together, in a systematic way, an assessment of a project’s likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for reducing them are properly understood by the public and the relevant competent authority before it makes its decision. The aim of EIA is to:

“protect the environment by ensuring that a local planning authority when deciding whether to grant planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision making process” and “ensure that the public are given early and effective opportunities to participate in the decision making procedures.” (Ref. 1.2)

1.3 LEGAL FRAMEWORK FOR THE ENVIRONMENTAL STATEMENT

- 1.3.1. The EIA Regulations 2017 implement the requirements of EU Directive 2014/52/EU and require that prior to consent being granted, for certain types of development, an EIA must be undertaken. The EIA Regulations 2017 set out the types of development which must always be subject to an EIA (Schedule 1 development) and other developments which may require an assessment if they give rise to likely significant environmental effects (Schedule 2 development).

SCREENING (REGULATIONS 5, 6 AND 7)

- 1.3.2. The proposed development falls under Schedule 3 of the EIA Regulations 2017 and is therefore subject to statutory EIA.
- 1.3.3. Under Schedule 2, it is a matter for the Local Planning Authority to determine the need for an EIA through the evaluation of the sensitivity of the site and surrounding area and whether the proposed development has the potential to result in likely significant environmental effects by virtue of its characteristics, location and nature of the effects (in accordance with Regulation 5 of the EIA Regulations 2017).
- 1.3.4. The applicant considers that an EIA is required to support the planning application and did not submit a request for an EIA Screening Opinion.

SCOPING (REGULATION 15)

- 1.3.5. An EIA Scoping Report was submitted to North Warwickshire Borough Council on 20 November 2020 (as presented in **Appendix 1.1 of Volume 3**, together with a formal request for an EIA Scoping Opinion, in accordance with Regulation 15(1) of the EIA Regulations 2017. A formal Scoping Opinion was subsequently received from the Council on 23 December 2020, followed by supplementary correspondence (dated 12 February 2021) following a request for clarification on a number of points, both of which are included in **Appendix 1.2 of Volume 3**. The full set out consultation responses to the Scoping request are contained at **Appendix 1.3 of Volume 3**. Further details on the Scoping Opinion and how it has informed this ES are provided in **Chapter 5: Approach to EIA**.

ENVIRONMENTAL STATEMENT

- 1.3.6. The findings of the EIA are presented in this ES which has been prepared in accordance with the EIA Regulations 2017 as well as Planning Practice Guidance (**Ref. 1.3**). The ES is provided in three parts:
- Volume 1: Non-Technical Summary;
 - Volume 2: Main Text;
 - Volume 3: Technical Appendices;
 - Volume 4: Figures and Illustrations.
- 1.3.7. Schedule 4 of the EIA Regulations 2017 provides details of the information required for inclusion in an ES. **Table 1-1** summarises the requirements and where the information is located in this ES.

Table 1-1 - Location of Required Information within the ES

	Required Information	Location within this [ES]
1	Description of the development, including in particular:	
	(a) a description of the location of the development	Chapter 2: The Existing Site
	(b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases	Chapter 3: Description of the Proposed Development
	(c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used	Chapter 3: Description of the Proposed Development
	(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.	Chapter 5: Approach to EIA and technical chapters 6 to 14
2	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.	Chapter 4: Reasonable Alternatives Considered
3	A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge	Chapter 2: The Existing Site, Chapter 5: Approach to EIA and technical chapters 6 to 14
4	A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	Technical chapters 6 to 14
5	A description of the likely significant effects of the development on the environment resulting from, inter alia:	
	The construction and existence of the development, including, where relevant, demolition works;	Technical chapters 6 to 14
	The use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	Technical chapters 9, 11 and 12

	Required Information	Location within this [ES]
	The emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;	Technical chapters 7 and 8
	The risks to human health, cultural heritage or the environment (for example due to accidents or disasters);	Technical chapters 10 and 14
	The cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	Technical chapters 9, 10, 11 and 12
	The impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	Chapter 3: Description of the Proposed Development
	the technologies and the substances used.	
6	A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Technical chapters 6 to 14
7	A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	Technical chapters 6 to 14
8	A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU(3) of the European Parliament and of the Council or Council Directive 2009/71/Euratom(4) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	Chapter 3: Description of the Proposed Development
9	A non-technical summary of the information provided under paragraphs 1 to 8	Non-Technical Summary (ES Volume 1)
10	A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	All chapters

1.4 THE PROJECT TEAM

- 1.4.1. In line with Regulation 18(5)(a) – (b) of the EIA Regulations 2017, the ES and technical assessments which inform it have been undertaken by a suitably qualified project team. **Table 1-2** presents the Project Team for the ES, their associated roles and expertise. The Project Team stated are responsible for the scope, content and assessment of likely significant environmental effects of their respective technical chapters (where relevant).
- 1.4.2. WSP is responsible for the coordination, compilation and procedural review of the ES. WSP is registered under the EIA Quality Mark operated by the Institute of Environmental Management and Assessment (IEMA) which recognises our commitment to excellence in EIA activities. WSP was one of the original eight pilot organisations in the UK that trialled the process in 2011 and developed the EIA Quality Mark scheme from the former Corporate Registered Assessor process. We have continued to maintain our EIA Quality Mark registration, following annual examination by IEMA in relation to our ongoing products, staff, innovation and promotion of EIA within the industry. WSP has and continues to support and lead nationally recognised guidance for EIA in the UK.
- 1.4.3. WSP has developed and applies an in-house set of processes, procedures and guidance for EIA based on sound project management principles.



Table 1-2 - The Project Team

Element	Competent Expert Evidence
EIA Coordination, overarching technical authority for the ES Chapter 1: Introduction Chapter 2: The Existing Site Chapter 3: Description of the Proposed Development Chapter 4: Reasonable Alternatives Considered Chapter 5: Approach to the EIA Non-Technical Summary	Doug Hann (WSP), BA(Hons) MTPL MSc MRTPI - Director, Planning Consultancy James Warrington (WSP), BA(Hons) MSc MRTPI – Associate, Planning Consultancy
Chapter 6: Highways, traffic and transport	Chris Bancroft (Bancroft Consulting), HNC C.Eng. Adv Dip TS FCILT - Director Robert Tams (Bancroft Consulting), BSc (Hons) MSc CMILT - Associate Director
Chapter 7: Noise	Robin Brown (WSP), BSc(Hons) AMI - Associate Adam Walker (WSP), BSc(Hons) AMIOA – Acoustics Engineer

Element	Competent Expert Evidence
Chapter 8: Air Quality	<p>Damian Pawson (WSP), BSc(Hons) - Associate Director - Technical Reviewer</p> <p>Joe Granelli (WSP), MChem (Hons) AIEEnvSC - Technical Consultant</p> <p>Declan Alder (WSP), BSc (Hons), CEnv, MIAQM, MIEEnvSC, PIEMA – Technical Consultant</p>
Chapter 9: Land and Soil	Tony Kernon (Kernon Countryside Consultants) – BSc (Hons), MRICS, FBIAC
Chapter 10: Landscape and visual impact	<p>Jeremy Smith (SLR Consulting), MA, PGDip, CMLI – Director, Landscape</p> <p>Emma Jinks (SLR Consulting), MA Oxon, PGDip, CMLI – Technical Director, Landscape</p>
Chapter 11: Nature conservation and biodiversity	Dr Colin Lee (Aspect Ecology), BSc(Hons) PhD MCIEEM – Associate Director
Chapter 12: Flooding and drainage	<p>Sarah Burrows (Burrows Graham), BEng CEng MICE FCIHT – Director</p> <p>Jack Williams (Burrows Graham) - Associate</p>
Chapter 13: Socioeconomics	<p>Andrew Pepler (WSP), BSc (Hons) MSc MRTPI - Director, Planning Consultancy</p> <p>George Burgess (WSP), BA (Hons) MSc MRTPI – Principal Planner, Planning Consultancy</p>
Chapter 14: Cultural heritage and archaeology	<p>Jon Chandler (WSP), BA PGDip MCIIfA - Associate Director, Cultural Heritage and Archaeology</p> <p>Debbie Taylor (WSP), MA BA(Hons) MCIIfA - Senior Consultant, Cultural Heritage and Archaeology</p> <p>Nick Corbett (WSP), BA Hons Bpl MA (Urb Des) MRTPI IHBC - Associate Director, Heritage Planning & Placemaking</p>

1.5 PLANNING APPLICATION DOCUMENTS

1.5.1. The ES is one of a suite of documents which will support the planning application for the proposed development. The planning application submission comprises the following documents:

- Application Fee and Covering Letter;
- Planning Submission Documents:
 - Application Forms, Certificates and Notices;
 - Architectural Drawings;
 - Red and Blue Line Plan;
 - EIA Site Location Plan;

– Parameters Plan

- Design and Access Statement;
- Planning Statement;
- Employment Land Statement;
- Employment Land Need Assessment;
- Rail Terminal Connectivity Assessment;
- HGV Parking Facility Need Assessment;
- Statement of Community Engagement;
- Phase 1 and 2 Site Investigation;
- Connectivity Strategy.

■ Environmental Statement: Volumes 1-4

1.6 REFERENCES

- **Reference 1.1:** Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Statutory Instrument 2017 No. 571.
- **Reference 1.2:** Planning Practice Guidance (PPG) Online Tool, Paragraphs 032 and 033. Reference ID: 4-002-20140306. [Online] accessed via <https://www.gov.uk/guidance/environmental-impact-assessment>.
- **Reference 1.3:** Planning Practice Guidance (PPG) Online Tool. [Online] accessed via <https://www.gov.uk/guidance/environmental-impact-assessment>.

2

THE EXISTING SITE



2 THE EXISTING SITE

2.1 INTRODUCTION

2.1.1. This chapter provides an overview of both the context and environmental characteristics of the site and the surrounding area. Key spatial boundaries are illustrated at **Figure 1.1 of Volume 4** and planning and environmental designations are summarised below. Further technical information is provided within the technical chapters 6 to 14.

2.2 THE SITE

2.2.1. The Area of Interest for the purposes of this ES comprises an area of approximately 38.87 hectares (ha) and is located at the north-eastern quadrant of junction 10 of the M42 motorway (J10 M42) near Dordon, North Warwickshire. The Area of Interest is shown on the EIA Location Plan contained at **Figure 1.1 of Volume 4**.

2.2.2. Two different 'areas' are indicated, as follows:

- The development site (circa 32.36ha); and
- Off-site areas for potential landscape and visual mitigation, biodiversity enhancements and footpath/cycleway enhancements (circa 6.51ha).

2.2.3. Whilst two separate 'areas' make up the Area of Interest for the purposes of the ES, the characteristics of both are predominantly the same given they are linked to one another and form part of a much larger parcel of land. As such, the land within the Area of Interest can be described collectively as being bound that by the M42 to the west (beyond which lies the border between North Warwickshire Borough Council and Tamworth Borough Council), the A5 trunk road to the south, the village of Dordon to the east and further arable farmland and the village of Birchmoor to the north.

2.2.4. The land is owned entirely by Hodgetts Estates and is farmed each year. As such, the monocrop nature of the of arable farming is not conducive to extensive faunal and/or floral diversity, the majority of which is to be found around the periphery of the site.

2.2.5. There is a mature tree belt to the west and south of the site along the route of the M42 and J10. To the south of the site is a mature hedgerow along the A5 boundary which contains intermittent semi-mature trees. There are also some thickets of self-set juvenile trees and shrubs surrounding an existing car park and hardstanding in the south of the site.

2.2.6. The Area of Interest is transected by a gas pipeline and oil pipeline. Development proposals will consider these pipelines, as well as their respective easements and consultations zones. Furthermore, two low voltage electricity lines also cross the site in an east-west / north-south axis respectively, with limited uncultivated vegetation around the base of each mast/pole.

2.2.7. A public bridleway (AE45) transects the site and a public footpath (AE46) borders the northern-eastern boundary of the site. These are essentially raised single lane farm tracks for the use of farm vehicles, which have grassed verges and banks down to the fields on each side.

2.2.8. Further details on current land use within the site and surrounding area are provided within the technical chapters at chapter 6 to 14.

2.3 THE SURROUNDING AREA

- 2.3.1. The site is situated between Tamworth, Dordon and Birchmoor, strategically located immediately north east of Junction 10 of the M42.
- 2.3.2. The M42 provides direct links to the wider strategic motorway network including the M6, M40 and M5 as well as a series of key A roads in the West Midlands area, including the A5 which bounds the site to the south.
- 2.3.3. Land to the south of the A5 includes the recently developed St Modwen Park Tamworth (south-east of J10) and the established Birch Coppice Business Park and Core 42 Business Park.
- 2.3.4. J10 comprises a cluster of logistics, warehousing and other development. In addition to St Modwen Park Tamworth, the north-west quadrant comprises Relay Park – home to a Sainsbury’s Distribution Centre and other businesses – and Tamworth Motorway Service Area (MSA) which includes coach and HGV parking. The south-west quadrant comprises Centurion Park, which also hosts a range of businesses, particularly in the logistics, storage and distribution sector.
- 2.3.5. As such, the site is within an area characterised by similar uses to that proposed, owing to its highly strategic location adjacent to J10.

2.4 ENVIRONMENTAL CHARACTERISTICS

- 2.4.1. Key environmental features are summarised below, with further detail available in technical chapters 6 to 14.

DESIGNATIONS

- 2.4.2. The site is not within any national designations for valued landscapes, such as AONBs or National Parks. Other landscape-related designations in the locality are summarised below.
- 2.4.3. There are two areas of open space to the east of the site on the edge of Dordon. The first of these, (Kitwood Avenue Recreation Ground) forms part of the North Warwickshire Local Plan (the Local Plan). The second (Site Allocation OS1), which adjoins the A5 is proposed as an Open Space Transfer Location in the Local Plan , as a replacement for Birch Coppice Sports Club which is allocated for employment uses.
- 2.4.4. A public bridleway (AE45) extends along part of the eastern boundary and within the eastern edge of the site. A public footpath (AE46) extends from public bridleway AE45 to the east and turns south connecting with the A5. Public footpath AE48 is located to the east of the site. Public footpaths AE52 and AE55 extend in a southerly direction from the A5 to the south of the site.
- 2.4.5. A number of Grade II and II* Listed buildings are present to the north within the Polesworth Conservation area at a distance of approximately 1.2km from the edge of the Conservation Area to the site. Four Grade II Listed buildings are present within Freasley to the south at a distance of approximately 830m. The Grade II Listed Hall End Hall Farm is present to the south-east of the site at a distance of approximately 780m.
- 2.4.6. The site forms part of an area of Strategic Gap as defined within Local Plan Policy LP4.
- 2.4.7. Further details of designations within the site and surrounding area are provided in the technical chapters.

NATURAL RESOURCES

Water

- 2.4.8. The site sits on greenfield land entirely within Flood Zone 1. This is land defined as having less than a 1 in 1000 annual probability of flooding from of river or sea water and is therefore defined as 'less vulnerable'.
- 2.4.9. An assessment of other means of flooding have led to the conclusion the site has a low probability from surface, groundwater, sewer and artificial sources.

Air quality

- 2.4.10. The 2020 NWBC LAQM Annual Status Report confirms that NWBC does not have any AQMAs in their jurisdiction.
- 2.4.11. Nearby monitoring has identified that annual mean concentrations of Nitrogen Dioxide have been below the annual mean objective in 2019 for 3 of the identified passive diffusion tube locations within 2 km of the site. However, an exceedance is identified at the '7' diffusion tube site along A5 Watling Street, near Dordon.

Noise

- 2.4.12. A desktop review of the site has identified the existing key noise sources around the site and the closest sensitive receptors.
- Existing noise sources include:
 - Road traffic noise from the M42 to the west;
 - Road traffic noise from the M42/A5 roundabout J10, to the south-west; and
 - Road traffic noise from the A5, Watling Street, to the south including from an existing commercial development opposite the proposed development.

- 2.4.13. No clearly identifiable vibration sources have been identified by our desktop review

Ecology

- 2.4.14. No ecological designations have been identified within or adjacent to the site.
- 2.4.15. The vast majority of the site is dominated by intensively managed arable habitats, which do not represent an ecological constraint on the proposed development.
- 2.4.16. Internal boundary features are limited to a small number of grassland corridors/paths, which support common species typical of arable boundaries, without mature structural or woody vegetation. Accordingly, these habitats are likely easily replaceable, and they are unlikely to represent a constraint in regard to masterplanning of any proposed development in relation to habitat value.
- 2.4.17. Mature boundary hedgerows and planting are present at the site boundaries, including a small number of trees (the majority of which are set away from proposed development areas with significant offset buffers).
- 2.4.18. In terms of faunal considerations, these relate largely to potential for limited grassland corridors associated with the field margins to support common reptiles, along with minor opportunities for bird species.

Land and soil

- 2.4.19. The site has been the subject of a detailed Agricultural Land Classification survey and found to comprise a mixture of land quality grades. The majority of the site is Grade 2, with an area of Subgrade 3b in the south.

Landscape and Visual

- 2.4.20. The site is not within any national designations for valued landscapes, such as AONBs or National Parks.
- 2.4.21. Other landscape-related designations in the locality are summarised below and discussed further in chapter 10:
- There are two areas of open space to the east of the site on the edge of Dordon – Kitwood Avenue Recreation Ground and Open Space Transfer Location OS1, both of which are designated in the adopted Local Plan.
 - A public bridleway (AE45) extends along part of the eastern boundary and within the eastern edge of the site. A public footpath (AE46) extends from public bridleway AE45 to the east and turns south connecting with the A5. Public footpath AE48 is located to the east of the site. Public footpaths AE52 and AE55 extend in a southerly direction from the A5 to the south of the site.
 - The site is also located within an area of Strategic Gap as defined within the Local Plan (Policy LP4).

Cultural Heritage and Archaeology

- 2.4.22. The National Heritage List for England shows that there are no designated (protected) heritage assets within the site, such as scheduled monuments and listed buildings.
- 2.4.23. A number of Grade II and II* Listed buildings are present to the north within the Polesworth Conservation area at a distance of approximately 1.2km from the edge of the Conservation Area to the site. Four Grade II Listed buildings are present within Freasley to the south at a distance of approximately 830m. The Grade II Listed Hall End Hall Farm is present to the south-east of the site at a distance of approximately 780m.
- 2.4.24. Further details on these designations are set out in chapter 14.

OTHER RESOURCES

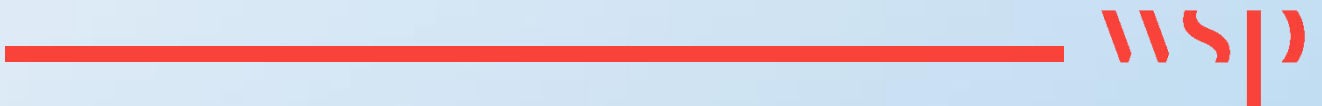
- 2.4.25. As stated, a high-pressure gas main runs along a north-south axis immediately to the east of the site. Development cannot take place within the 78m inner consultation zone to either side of the pipe itself (156m in total). This acts as a hard barrier, preventing development pressure from translating into further expansion of this site in the future.

2.5 SENSITIVE RECEPTORS

- 2.5.1. There are a number of sensitive receptors that have been identified as relevant to the proposed development. As the extent of sensitive receptors differs between different ES topic areas, sensitive receptors relevant to each ES topic area are detailed and have been taken into consideration within the assessments presented in technical chapters 6 to 14.

3

DESCRIPTION OF THE PROPOSED DEVELOPMENT



3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 INTRODUCTION

3.1.1. This chapter provides a description of the proposed development, including a description of how the proposed development would be constructed, alongside the assumptions used for the basis of the assessment where this information is subject to confirmation. This description aligns with what planning consent is sought for, and, together with the supporting plans, is what the technical assessments are based upon (technical chapters 6 to 14).

3.2 SCHEME OVERVIEW AND DEVELOPMENT PARAMETERS

3.2.1. Outline planning permission is sought, and the description of development is expected to be as follows:

‘Outline planning permission for development of land within Use Class B2 (general industry), Use Class B8 (storage and distribution) and Use Class E(g)(iii) (light industrial), and ancillary infrastructure and associated works, development of overnight lorry parking facility and ancillary infrastructure and associated works. Details of access submitted for approval in full, all other matters reserved.’

3.2.2. The ‘Area of Interest’ comprises the development site and off-site areas within the same land ownership for potential biodiversity enhancements, footpath/cycleway enhancements and landscape and visual mitigation purposes, as set out in the plan contained at **Figure 1.1 of Volume 4**.

3.2.3. The approval of the development parameters in outline would allow for the scheme to be developed in a number of ways, within established parameters, through the reserved matters process. This will provide flexibility for the development of the site to ensure it meets the needs of its end-user(s).

THE DEVELOPMENT SITE

3.2.4. The following maximum and minimum parameters for the development to be contained within the development site (as indicated on the Parameters Plan contained at **Figure 3.1 of Volume 4**) are as follows:

- New vehicular and pedestrian access from the A5 Trunk Road;
- Public Bridleway AE45 diverted within the development site, providing an enhanced route linking Birchmoor to the proposed green infrastructure, A5 Trunk Road and local services, such as bus stops located on the A5 Trunk Road and within St Modwen Park Tamworth;
- A substantial area of green infrastructure (over 9ha) principally to the north, south and east of the plots, incorporating open space, planting, landscaping, public rights of way, sustainable drainage system (SuDS) and a variety of wildlife habitats, provides a minimum development offset of 35m extending to 134m from the built development edge to the site boundary;
- Existing peripheral vegetation retained, enhanced and strengthened to provide a robust landscape buffer;
- Naturalistic earth mounds formed within the green infrastructure, utilising surplus cut material from the development site, to create a transitional zone between the developable area and development site perimeter and to provide visual mitigation where necessary;
- Up to 100,000 sqm (1,076,391sqft) of mixed Class B2, Class B8 and Class E(g)(iii) floorspace;
- Up to a maximum of 10% Class B2 / Class E(g)(iii);

- Maximum development height of +117.8m AOD at the less sensitive westernmost Plot A1 adjacent to the M42 motorway;
- Reduced maximum development height of +113m AOD at Plot A2, north of Plot A1 closer to Birchmoor;
- Reduced maximum development height of +111m AOD at the easternmost Plot B1, closer to Dordon;
- Reduced maximum development height of +102m AOD at Plot B2, at the entrance to site;
- Up to 150 space overnight lorry parking facility;
- Up to 400 sqm amenity building for overnight lorry parking facility (shop, restaurant/takeaway, laundry, gym, changing facilities, showers, toilets, etc);
- Creation of substantial landscaped buffer zones to the development site perimeter (in addition to the off-site areas for potential mitigation identified at Appendix A), as follows:
 - North - an extensive landscape buffer to the north of Plot A2 extending to 134m at its widest, reducing to 75m at the closest point to Birchmoor;
 - East - an extensive landscape buffer to the east of Plot A1 extending to 106m at its widest reducing to 49m to the north-east of Plot A2, and extending to 65m to the east of Plot B1 and Plot B2 and a minimum 35m to the north-east of Plot B1, where proposed building heights are lower;
 - South - a minimum 35m to the south of Plot A1 extending to 58m in the south-west corner of the plot close to J10 M42 and 35m-37m to the south of Plot B2;
 - West - a minimum 10m landscape buffer to the west of Plot A1 and Plot A2, where existing screening vegetation for the M42 motorway is extensive and mature.

OFF-SITE AREAS FOR POTENTIAL LANDSCAPE AND VISUAL MITIGATION

- 3.2.5. As indicated on the plan showing the Area of Interest at **Figure 1.1 of Volume 4**, a number of additional areas of land within the applicant's control are included within the Area of Interest for the purposes of ES scoping and EIA.
- 3.2.6. These areas are to provide potential landscape and visual impact mitigation, biodiversity enhancements and connectivity enhancements, through planting and new footpaths/cycleways, providing access to members of the public.
- 3.2.7. Given that no development will take place in these areas, they have only been assessed in terms of landscape and visual and ecology impact from an EIA perspective.

3.3 PLANNING APPLICATION BOUNDARY

- 3.3.1. All temporary and permanent activities relating to the construction and operational activities of the proposed development would be contained within the planning application boundary as illustrated in **Appendix 1.1 of Volume 3**.
- 3.3.2. The EIA is based upon this planning application boundary which totals approximately 38.37 ha, but due to the nature of the application, comprises a site area of approximately 32.36 ha for the development and approximately 6.51 ha for the off-site areas for potential landscape and visual mitigation and biodiversity enhancements.

3.4 DESIGN AND ACCESS OVERVIEW

3.4.1. Full details of design and access are contained in the accompanying Design & Access Statement and Design Guide. This section provides an overview of the proposals for the purposes of providing context for the subsequent chapters in this ES Main Report.

QUANTUM

3.4.2. The total floorspace assessed for the purposes of this ES is up to 100,000 sqm (1,076,391sqft) of mixed Class B2, Class B8 and Class E(g)(iii) development. Given this aligns with the maximum floorspace parameter set out at ES Scoping stage and assessed in this ES and technical chapters, the total floorspace proposed is clearly within the acceptable limits.

3.4.3. Of the proposed 100,000sqm maximum floorspace parameter, up to a maximum of 10% could be Class B2 / Class E(g)(iii) development.

LAYOUT

3.4.4. As this is an outline planning application, details of the proposed layout will be a reserved matter.

3.4.5. A Parameters Plan (**Figure 3.1 of Volume 4**) signifies the extent of the development plots which future reserved matters application will have to adhere to.

SCALE

3.4.6. Whilst exact details of the proposed scale will also be a reserved matter, as set out above, the proposed development and subsequent reserved matters applications will have to adhere to the following height parameters:

- Maximum development height of +117.8m AOD at the less sensitive westernmost Plot A1 adjacent to the M42 motorway;
- Reduced maximum development height of +113m AOD at Plot A2, north of Plot A1 closer to Birchmoor;
- Reduced maximum development height of +111m AOD at the easternmost Plot B1, closer to Dordon;
- Reduced maximum development height of +102m AOD at Plot B2, at the entrance to site;

APPEARANCE AND MATERIALS

3.4.7. Where the proposals are in outline only, no details of the proposed external materials are known at this stage. However, it is assumed, given the proposals comprise B2/B8 uses, that the materials will reflect the operational requirements associated with general industrial/logistics development, whilst striving to create the high-quality design and finishes. This will ensure a high-quality environment and provide a visual mitigation between the proposed development and context of the wider setting.

ACCESS AND MOVEMENT

3.4.8. As set out in the Transport Assessment (**Appendix 6.1 of Volume 3**), the proposed development would be served by a new signal controlled all-movements access junction at the A5. The proposed access layout has been designed in accordance with published guidance from National Highways (NH), acting as the Highway Authority responsible for the A5 carriageway.

3.4.9. Details of the proposed development peak hour traffic generation have been agreed with officers at both Warwickshire County Council (WCC) and NH and the resulting movements assigned to the

surrounding highway network using the strategic traffic model that formed the basis of the Local Plan assessment.

- 3.4.10. The site is currently served by a reasonable level of infrastructure to accommodate predicted journeys by walking, cycling and public transport modes. However, HE is committed to delivering enhancements and, as such, the proposed development would deliver a range of substantial accessibility improvements, particularly for walking and cycling journeys, that would benefit all site users as well as nearby business parks and residents more broadly.
- 3.4.11. These improvements include upgrading the existing eastbound bus stop at the A5, provision of signal controlled crossing facilities within the access as an alternative to the current priority controlled crossing nearby, upgrading of existing footpaths within the site and adjacent land to provide much improved pedestrian and cyclist links that avoid the J10 M42 and A5 corridor, and finally the delivery of a continuous shared footway/cycleway link that extends throughout the scheme connecting the A5 to Birchmoor and a series of designated route options for pedestrians and cyclists. Access by public transport is also achievable through local bus routes, including the nearby bus stops at Birchmoor and two rail stations at Polesworth and Wilnecote.

OPERATIONAL EMPLOYMENT

- 3.4.12. In addition to construction employment (discussed below), the proposed development is anticipated to directly employ between 776 to 1,295 net additional permanent jobs, once operational.
- 3.4.13. Further details on employment generation are set out in **Chapter 13: Socio-economics**.

3.5 PROPOSED STRATEGIES

- 3.5.1. A number of overarching strategies have been implemented since the outset of the project to underpin and guide future scheme design, the construction and operational phases, as discussed in the paragraphs below.

CLIMATE CHANGE ADAPTATION, ENERGY AND SUSTAINABILITY STRATEGY

- 3.5.2. HE is committed to sustainability and mitigating climate change impacts and accordingly has set a very high target for this development to be *“The Greenest Business Park in the West Midlands”*. As such, the proposals incorporate the following features and building standards:

- Targeting a BREEAM ‘Excellent’ Rating for all buildings;
- Energy Performance Certificate ‘A’ Rating for all buildings;
- Speculative buildings to be built to UK Green Building Council’s ‘Net Zero Carbon Ready’ standard for construction;
- At least 10% of energy generated from on-site renewable or low carbon sources (e.g., solar panels), and ensuring all buildings can be adapted to accommodate existing and future technologies (e.g. ‘solar PV ready’ steel portal frame, connected battery technology, etc);
- Air and/or ground source heat pumps to provide heating to all offices;
- Recyclable structure and cladding system;
- Use of low environmental impact and bio-based materials that also provide good insulation;
- High air tightness rating and sun awnings / brise-soleils to create ambient temperature and minimise the need for energy intensive heating and cooling to all buildings;
- Electric vehicle charging points and ‘rapid’ charging points, with ducting provided to all parking spaces to future proof the development;

- Ducting provided to lorry parking spaces for fully electric and hybrid electric lorries, to future proof all service yards and the overnight lorry parking facility;
- Showers and changing facilities provided to all units;
- Communal cycle parking, showers and changing facilities to be provided at the ancillary Hub Office, available for use by site occupiers as well as the general public (including staff of neighbouring business parks) to encourage walking and cycling to work;
- Rainwater harvesting to reduce water consumption, for measures such as flushing toilets, landscape watering and vehicle/interior cleaning;
- Minimise construction waste and topsoil and subsoil cut and fill to be balanced across site to avoid the need for materials to be removed from site;
- Develop a sustainable Framework Travel Plan (FTP) to minimise single occupancy vehicle trips to and from the site; and
- Conserve and enhance biodiversity and achieve a significant biodiversity net gain across the site.

3.5.3. To help achieve these aspirations, a Design Guide has been developed in conjunction with leading professionals to provide both an overarching framework and parameters for future reserve matters applications, to ensure that any future development of the site would be brought forward in a cohesive manner that respects the locational context.

3.5.4. As part of this Design Guide, a series of High Quality Design Principles (HQDP) have been developed as follows:

- **HQDP 1:** Responding to the climate change emergency by designing in and future-proofing sustainability from the start across all aspects of building, infrastructure and landscape design, whilst allowing for adaptation and later enhancement to meet occupier requirements.
- **HQDP 2:** Maintaining a Strategic Gap between the development site and Polesworth with Dordon to the east, and Birchmoor to the north, utilising Hodgetts Estates' extensive land holdings, to create a strong landscape setting with views and legible routes to and from the site, connecting with the surrounding landscape.
- **HQDP 3:** Providing safe and convenient access for all users coming to and from the site, including the local community for leisure uses, commuters, and visitors.
- **HQDP 4:** Ensuring that prominent buildings are distinctive, distinguishable, and relate to human scale and operational requirements whilst minimising the wider visual impact. Larger warehouse elements will utilise varied ground levels and sympathetic building components to break up facades and screen service yards.
- **HQDP 5:** Generating a uniform architectural language and design of built form to enhance legibility and wayfinding for the site and surroundings. Creating a sense of place and respecting the distinctive and varied architecture of Birchmoor, Dordon, and Polesworth.
- **HQDP 6:** Encouraging healthy and active lifestyles through the incorporation and enhancement of landscaping features, and linkages between the site and surrounding area for recreation and leisure uses.

LANDSCAPE STRATEGY

3.5.5. The proposals have been sympathetically designed to preserve and reinforce the separate identities of Polesworth, Dordon, Birchmoor and Tamworth, and whilst the proposed development will reduce the physical distance between the settlements, any perceived harm will be limited through carefully designed mitigation measures to maintain a functional and meaningful gap between them.

- 3.5.6. To the north and east of the development site, naturalistic earth mounds are proposed to be planted with native woodland species and interspersed with publicly accessible open parkland. These measures will both screen the existing developments currently visible along the A5 corridor as well as the new buildings that are being proposed.
- 3.5.7. As indicated above, the proposals incorporate the creation of substantial landscaped buffer zones to the development site perimeter, as follows:
- North - an extensive landscape buffer to the north of Plot A2 extending to 134m at its widest, reducing to 75m at the closest point to Birchmoor;
 - East - an extensive landscape buffer to the east of Plot A1 extending to 106m at its widest reducing to 49m to the north-east of Plot A2, and extending to 65m to the east of Plot B1 and Plot B2 and a minimum 35m to the north-east of Plot B1, where proposed building heights are lower;
 - South - a minimum 35m to the south of Plot A1 extending to 58m in the south-west corner of the plot close to J10 M42 and 35m-37m to the south of Plot B2;
 - West - a minimum 10m landscape buffer to the west of Plot A1 and Plot A2, where existing screening vegetation for the M42 motorway is extensive and mature.
- 3.5.8. Through the creation of the aforementioned naturalistic earth mounds in the landscaped buffer zones to the north, south and east of the developable area, the buildings will be largely screened from view and as the native woodland planting and screening matures, the whole of the site would eventually be almost entirely screened from sensitive locations at Birchmoor, Polesworth with Dordon and the public right of way network locally.
- 3.5.9. As the applicant owns the entirety of the open land between the M42 motorway and Polesworth with Dordon in this location, it has also been able to incorporate offsite landscape mitigation measures and enhancements across the width of the Strategic Gap.
- 3.5.10. In total, some 6.51 hectares (16 acres) of off-site landscape mitigation measures and enhancements are proposed through native woodland planting, reinstatement of historic field boundaries/hedgerows and footpath enhancements, providing access to members of the public. The offsite measures would be secured in perpetuity through a legal agreement NWBC to prevent further expansion of development in those parts of the Strategic Gap.
- 3.5.11. The offsite landscape mitigation measures could also incorporate a new 'community orchard' and rural walkways next to Dordon and across the Strategic Gap, including the planting of local heritage fruit tree varieties where appropriate.
- 3.5.12. Further details on the landscaping strategy can be found in the accompanying Design Guide and landscape plans.

BIODIVERSITY STRATEGY

- 3.5.13. The biodiversity strategy is driven by an aspiration to delivery significant biodiversity net gains, including the creation of over 9ha of new habitats including native woodlands, native shrublands, mixed hedgerows, wildflower meadows, wetland wildflower meadows, ornamental planting and amenity grassland.
- 3.5.14. Further ecological enhancements proposed include:
- Bird and bat boxes to promote nesting and roosting;

- 'Insect hotels' to provide refuge in suitable locations throughout the substantial area of green infrastructure;
- Bee hives and bee bricks for wild bees, placed close to wildflower meadow and wetland wildflower meadow habitats;
- Butterfly banks, provide breeding opportunities and enhance connectivity between habitats for a range of butterfly and moth species and other invertebrates;
- Buried logs 'loggery' and log piles, i.e., dead and decaying wood, which is an important wildlife habitat used by many species of reptiles, beetle and invertebrates;
- Refugia/hibernacula for invertebrates, small mammals, reptiles, and amphibians;
- Maintenance of 'dark corridors' through the site for foraging bats;
- Creation of new wildlife corridors through provision of native woodland planting to the north and east of the site; and
- Wildlife information boards tying in with the proposed new footpaths, cycleways and seating areas, to provide education/learning opportunities on notable habitats, species and features, as part of amenity enhancements.

DRAINAGE STRATEGY

- 3.5.15. The site is located entirely within Flood Zone 1 (land defined as having less than a 1 in 1000 annual probability of flooding from of river or sea water) and is defined as 'less vulnerable' leading to the conclusion the development is considered 'appropriate' in accordance with NPPF guidelines.
- 3.5.16. The site is considered to be at 'low risk' from all sources of flooding; fluvial, pluvial, tidal, sewer related, groundwater and artificial sources.
- 3.5.17. The proposed drainage strategy is that surface water runoff will be collected from the impermeable areas and directed via the underground network to a SuDS in the form of an attenuations pond in the south of the site. From there, the outfall would be restricted to greenfield runoff rates to the manhole which forms part of the culverted watercourse in the south west corner of the site.
- 3.5.18. Foul flows will be collected by an independent network and discharge to the nearest foul sewer located to the east of the development adjacent to the A5.

WASTE MANAGEMENT STRATEGY

- 3.5.19. A Site Materials Management Plan (SMMP) will be prepared to minimise construction waste from the earthworks, in addition to a commitment to topsoil and subsoil cut and fill balance across site to avoid the need for these materials to be disposed of or removed from / imported to the site.
- 3.5.20. In addition, a Site Waste Management Plan (SWMP) will be prepared to minimise construction and operational waste from site. This document will provide a framework for the creation of individual Waste Management Plans bespoke to each building, as and when future reserved matters applications are submitted. There are ambitious targets for the reduction of waste during the construction period which would be facilitated by the use of responsible methods of construction.
- 3.5.21. These measures can be secured through the implementation of pre-commencement conditions attached to any planning permission.

3.6 CONSTRUCTION PROPOSALS

PROGRAMME

- 3.6.1. The potential build programme is not known at this stage, however, subject to the grant of planning permission, it is envisaged that the infrastructure/enabling works would be undertaken between Q3 2022 – Q1 2023, with construction of buildings to take place between Q4 2022 – Q4 2023, and the opening year anticipated to be 2023/2024.
- 3.6.2. Whether the development is delivered in phases is dependent on the type of occupiers and ultimately whether it will be a single or multi-unit scheme, and this may greatly alter the potential build programme and opening year for particular buildings.

PROPOSED KEY CONSTRUCTION ACTIVITIES

- 3.6.3. A series of assumptions have been made in relation to the proposed site preparation, earthworks and construction activities following discussions with Hodgetts Estates. Where assumptions have been made, it is stated within each technical chapter.

SECURITY AND FENCING

- 3.6.4. The intention is that the application site will be secured with the erection of full height close boarded hoarding (or similar) throughout the construction phase. Where necessary, public rights of way would be diverted through or around the site during the construction phase. It is not envisaged that any public rights of way would need to be temporarily stopped up during the course of construction, without a temporary diversion / diversion having first been provided.
- 3.6.5. The hoardings will be positioned at a safe distance from the line of any boundary works or perimeter walls, allowing the minimum safe space of construction plant within the hoarding.
- 3.6.6. The application site will be fully secured based on an access permit system and security staff or other controls at vehicular and pedestrian entrances. The application site will have permanent CCTV monitoring during construction, and this will be provided by an insurance approved contractor.

CONSTRUCTION EMPLOYMENT

- 3.6.7. It is estimated that the net additional construction employment for the local area would be between 255 to 283 person years, generating a Gross Value Added to the regional economy of between £17.9m and £19.9m.
- 3.6.8. Further details are contained within **Chapter 13: Socio-Economics**.

CONSTRUCTION ACCESS / HAULAGE ROUTES, PARKING AND TRAFFIC

- 3.6.9. Vehicles will access the application site via agreed entrances controlled by fully trained gatekeepers and traffic marshals, construction traffic will enter and exit through gates in a one-way direction if this can be accommodated.
- 3.6.10. Pedestrian traffic will enter the application site via a separate entrance and will be fully segregated from the construction traffic.

CONSTRUCTION COMPOUNDS

- 3.6.11. The location of the Principal Contractor's compound(s) have not been identified at this stage and will be largely dependent on the appointed Principal Contractor for the proposed development, which will be determined in due course.

GROUND REMEDIATION WORKS

- 3.6.12. Phase 1 and 2 Site Investigations have been undertaken, with reports (refs: 70530-1 and 70530-2 Rev 2) submitted as part of the planning application documents.
- 3.6.13. Following the recommendations of the desk-based assessment (Phase 1), intrusive investigations (Phase 2) were carried out (including window trial pits and cable percussive boreholes) to develop a ground model that summarises the ground investigation data, and highlight any uncertainties, and provides a geo-environmental appraisal for the site and the proposals.
- 3.6.14. The conclusions and recommendations of the Phase 2 investigation are as follows:
- Topsoil was encountered up to 0.4m bgl, overlying the Halesowen Formation. The Halesowen Formation was weathered to a sand or clay, becoming rock strength sandstone from 1.8m and 2.5m bgl.
 - Groundwater was encountered towards the south of the site from 0.9m. A surface water flooding risk was also identified in south of the site from the desk study data.
 - Groundwater level should be confirmed in the north of the site to the depth of the proposed cut levels.
 - The geo-environmental assessment of the site found that all samples of Topsoil and Halesowen Formation recorded contaminant concentrations well below their relevant screening criteria.
 - The site is characterised as characteristic situation 1, where no ground gas protection measures are considered necessary for the site.
 - It is considered that the Halesowen Formation would be a suitable bearing stratum for shallow foundations, which are far less intrusive than other forms of foundations.
 - An allowable bearing capacity of 500kN/m² is considered appropriate for the sandstone, assuming a foundation width of 1m.
 - Where there is fill, the material will be required to be engineered to a high specification to allow the required bearing capacity.
 - A design CBR value of 5% is considered appropriate for the cohesive deposits and 20% for the granular deposits.
 - Based on the results from the BRE SD-1 Suite testing, it is considered the site has a concrete classification of Design Sulphate Class DS-1 and an Aggressive Chemical Environment for Concrete as AC-1. Therefore, no special precautions are necessary at the site.

CRANES

- 3.6.15. Cranes will be used during construction of the proposed development. However, the type and size of any cranes utilised during the construction phase, as well as the period during which they will be on site, will be determined by the appointed Principal Contractor.

EARTHWORKS AND SITE LEVELS

- 3.6.16. The intention is to provide development plateaus that are mostly below existing ground levels, thus reducing the finished floor level and overall building heights. Excess material from this cut and fill

exercise would then be incorporated within landscaped buffer zones to ensure there is no waste sent to landfill.

- 3.6.17. Areas closest to residential properties (plots A2, B1, B2 shown on Parameters Plan Rev P11) will be of reduced building height to ensure possible impacts in those potentially more sensitive locations are reduced.
- 3.6.18. At plot A1 in the south-west corner of the site next to J10 M42, the maximum building height(s) would be restricted to below that already assessed and approved at St Modwen Park Tamworth.
- 3.6.19. Details of the exact levels and finished floor levels would be secured by planning condition and dealt with in due course.

CONSTRUCTION OF BUILDINGS / HARDSTANDING AND INSTALLATION OF PLANT / EQUIPMENT

- 3.6.20. The construction phase of the proposed development will involve a variety of different plant and equipment to undertake relevant works. The exact plant and equipment to be utilised throughout the construction phase will be sourced by the appointed Principal Contractor. The type and number of plant and machinery is likely to be variable over the construction period and is likely to be dependent on the nature of the construction activity.

CONSTRUCTION WASTE

- 3.6.21. Construction and demolition waste are expected to be managed through a private waste contractor(s). In the design stages, measures will be implemented to reduce of waste wherever possible considering modular design, materials procurement and off-site fabrication.
- 3.6.22. On-site, at construction stage, plans will be implemented to reduce impacts of waste through mitigation measures such as on-site segregation, staff training and overall materials management on-site.
- 3.6.23. The detailed SMMP and SWMP will be prepared at future design stages which will provide a comprehensive approach to how mitigation measures will be implemented, as well as potential waste savings at each stage. Compliance with the SMMP and SWMP(s) could be secured through planning condition(s) and requirements passed onto the main contractors within the contract for the works.

KEY CONSTRUCTION PRACTICES

- 3.6.24. Construction will be expected to follow at least best practice, with contractors being required to sign up and then adhere to the Considerate Constructors Code or similar.
- 3.6.25. At tender stage selected contractors will need to provide a preliminary Construction Environmental Management Plan (CEMP) and indicative programme. The preparation of a CEMP is an established method of managing environmental impacts resulting from demolition and construction works.
- 3.6.26. The CEMP would be submitted to NWBC (and other relevant bodies) prior to the commencement of the works. Compliance with the CEMP is anticipated to be secured by appropriate planning conditions or obligations, and the obligations contained within it passed onto the main contractors as 'Employer's Requirements' within the contract for the works.

3.7 REFERENCES

- Reference 3.1: Town and Country Planning (Use Classes) (England) Order 1987 (as amended 2015) – Statutory Instrument 2015 No. 597
- Reference 3.2: IEMA Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation. [Online] accessed via [https://www.iema.net/assets/templates/documents/iema_guidance_documents_eia_climate_change_resilience_and_adaptation%20\(1\).pdf](https://www.iema.net/assets/templates/documents/iema_guidance_documents_eia_climate_change_resilience_and_adaptation%20(1).pdf)
-
- Reference 3.3: BS5228

4

REASONABLE ALTERNATIVES CONSIDERED



4 REASONABLE ALTERNATIVES CONSIDERED

4.1 INTRODUCTION

4.1.1. This chapter outlines the main alternatives to the proposed development that have been considered by the Applicant, together with the principal reasons for proceeding with the proposed development.

4.2 REQUIREMENT FOR THE CONSIDERATION OF ALTERNATIVES

4.2.1. Schedule 4(2) of the EIA Regulations 2017 (Ref. 4.1) states that an ES should include;

“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”.

4.2.2. To accord with Schedule 4(2) of the EIA Regulations 2017, the following has been considered:

- The ‘do nothing’ scenario where the proposed development is not progressed;
- Alternative locations for the proposed development;
- Alternative uses for the site; and
- Alternative design and layout for the proposed development in the context of design evolution.

4.3 THE ‘DO NOTHING’ SCENARIO

4.3.1. The ‘do nothing’ scenario would effectively leave the site undeveloped and in its current agricultural use.

4.3.2. Without the proposed development, the significant benefits would not be realised, and the limited adverse impacts identified in the technical chapters 6 to 14 would not arise.

4.4 ALTERNATIVE LOCATIONS AND USES

4.4.1. Hodgetts Estates is the landowner of the site and the objective of the project is to develop it.

4.4.2. As identified in the Planning Statement and supporting application documents, the site is in a strategic and highly sustainable location for the land uses proposed, owing to its location at Junction 10 of the M42 motorway in the centre of the country. It is last remaining undeveloped quadrant at J10 M42, meaning there are no alternative locations at the junction.

4.4.3. Furthermore, the site identified is in the West Midlands Strategic Employment Sites Study Phase II (WMSESS II) (May 2021) as the joint best-performing site for strategic-scale employment development when compared against a range of criteria and a significant number of other sites (50 in total) throughout the West Midlands. The two other joint best performing sites assessed in the WMSESS II are located in the Green Belt, meaning they are sequentially less preferable.

4.4.4. Consequently, no other locations were considered for the proposed development.

4.5 ALTERNATIVE DESIGN

4.5.1. The development parameters set out in Chapter 3 and Parameters Plan (Rev P11) have been informed by an extensive design process with indicative designs developed to test the required

minimum and maximum development parameters whilst being mindful of site constraints and sensitive receptors.

- 4.5.2. As approval is sought in outline, the parameters-based approach to the development is intended to enable future flexibility in the layout, scale, appearance and landscaping proposals – matters that will be dealt with in detail at reserved matters stage, whilst working within a defined set of minimum and maximum development parameters and in accordance with the submitted Design Guide.
- 4.5.3. The quantum of floorspace sought is deemed necessary to respond to the spatial and need case requirements for strategic-scale warehousing and logistics development in this location. A reduced level of floorspace and/or developable area was therefore ruled out as it would not meet these requirements.
- 4.5.4. The proposed minimum and maximum development parameters and Parameters Plan (Rev P11) has taken into account the site constraints as well as other environmental constraints, which have been integrated into the Design Guide which will provide an overarching design code for subsequent reserved matters applications. In doing so, a number of potentially significant effects will either be reduced in severity, removed altogether or create positive effects.

4.6 REFERENCES

- Reference 4.1: Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Statutory Instrument 2017 No. 571.

5

APPROACH TO EIA



5 APPROACH TO EIA

5.1 INTRODUCTION

- 5.1.1. This chapter outlines the approach to the Environmental Impact Assessment (EIA), in particular the objectives and overall strategy for the EIA developed by WSP and the wider project consultant team. Scoping has been an ongoing process, which is documented within this chapter alongside the evidence base associated with those factors and elements scoped out of the assessment.
- 5.1.2. The approach to consultation is also outlined in this chapter, together with the approach to proportionate assessment including the assessment criteria and the methodology for assessing cumulative effects.
- 5.1.3. The EIA has been undertaken in accordance with the EIA Regulations 2017, National Planning Practice Guidance, IEMA's Environmental Impact Assessment Guide to Shaping Quality Development and guidance specific to the factors assessed.
- 5.1.4. The ES will also examine the proposals in relation to relevant policies in the development plan, taking account of emerging policy, guidance and proposals.
- 5.1.5. The North Warwickshire Local Plan was adopted on 29 September 2021, replacing the 2014 Core Strategy and Saved Policies of the 2006 version of the Local Plan.
- 5.1.6. In addition, the National Planning Policy Framework (NPPF) is an important material consideration in planning decision-making and contains a presumption in favour of sustainable development as well as overarching policy guidance in respect of economic growth and regeneration, a drive for more active and healthy lifestyles, transport and highways safety, preserving the historic environment and protecting and enhancing the natural environment.
- 5.1.7. A detailed overview of the site's status in relation to relevant planning policy is discussed within the accompanying Planning Statement.

5.2 OBJECTIVES OF THE EIA

- 5.2.1. The key objectives of the EIA are as follows:
- Set the legal framework;
 - Document the consultation process;
 - Consider the alternatives to the Proposed Scheme;
 - Establish baseline environmental conditions at the Site and within the surrounding area;
 - Identify likely significant environmental effects during the design process so that some effects can be avoided, prevented, reduced or, if possible, offset prior to the assessments within the Environmental Statement (ES) (i.e., demonstrating an iterative approach to EIA);
 - Identify, predict and assess the environmental effects associated with the Proposed Scheme: beneficial and adverse; permanent and temporary; direct and indirect and short / medium / long term; significant or not significant;
 - Identify, predict and qualitatively assess the cumulative effects of the Proposed Scheme including those associated with the other developments;

- Identify suitable mitigation measures to avoid, prevent, reduce or, if possible, offset likely significant adverse effects on the environment and identify the likely significant residual effects following the implementation of these measures; and
- Identify monitoring measures where likely significant residual adverse effects are identified.

5.2.2. Although not a requirement of the EIA Regulations 2017, opportunities for environmental enhancement are also explored.

5.3 SCOPING (REGULATION 15)

SCOPING REPORT

5.3.1. As set out in Section 1.3 of **Chapter 1: Introduction**, an EIA Scoping Report was submitted to NWBC on 20 November 2020 alongside a request for a formal Scoping Opinion in accordance with Regulation 15(1) of the EIA Regulations 2017. As part of NWBC's responsibility under Regulation 15(4) of the EIA Regulations 2017, consultation was undertaken with the following consultees:

- North Warwickshire Borough Council (Planning, Environmental Health);
- Warwickshire County Council (Highways Authority, Local Lead Flood Authority, Archaeology, Ecology);
- National Highways (formerly Highways England);
- Environment Agency;
- BPA Pipelines;
- Cadent Gas;
- Mainline Pipelines;
- HS2 Ltd;
- Tamworth Borough Council; and
- Coventry & Warwickshire Local Enterprise Partnership.

5.3.2. The EIA Scoping Report (**Appendix 1.1**) outlined that the proposed development has the potential to result in likely significant effects on the environment associated with the following factors:

- Chapter 6 – Highways, traffic and transport
- Chapter 7 – Noise
- Chapter 8 – Air quality
- Chapter 9 – Land and soils
- Chapter 10 – Landscape and visual impact
- Chapter 11 – Nature conservation and biodiversity
- Chapter 12 – Flooding and drainage
- Chapter 13 – Socio-economics
- Chapter 14 – Cultural heritage and archaeology

5.3.3. These factors and their associated likely significant environmental effects have been taken forward and assessed within this ES and are therefore *scoped in*, to the EIA.

5.3.4. The scoping responses received from external consultees in respect of the ES Scoping Report are presented at **Appendix 1.3 of Volume 3**. Each technical chapter sets out the scoping and other pre-application feedback received from consultees and ultimately how responses have been taken into account during the preparation of this ES. The comments generally follow the structure of the EIA Scoping Report.

- 5.3.5. As EIA is an iterative process taking place alongside the design of the proposed development, the process of scoping the assessment has been ongoing.
- 5.3.6. Whilst the development parameters proposed as EIA Scoping stage in October 2020 are largely unchanged, the following parameters have been changed slightly (indicated in red):
- 5.3.7. The following maximum and minimum parameters for the development to be contained within the development site (as indicated on the Parameters Plan Rev P11) are as follows:
- New vehicular and pedestrian access from the A5 Trunk Road;
 - Public Bridleway AE45 diverted within the development site, providing an enhanced route linking Birchmoor to the proposed ~~open-space green infrastructure~~, A5 Trunk Road and local services, such as bus stops located on the A5 trunk road and within St Modwen Park Tamworth;
 - A substantial area of ~~natural open-space green infrastructure~~ (over 9ha) principally to the north, south and east of the plots, incorporating open space, planting, landscaping, public rights of way, SuDS and a variety of wildlife habitats, provides a minimum development offset of 35m extending to ~~135m~~ 134m from the built development edge to the site boundary;
 - Existing peripheral vegetation retained, enhanced and strengthened to provide a robust landscape buffer;
 - ~~Potential for~~ Naturalistic earth mounds ~~formed within the green infrastructure~~, utilising surplus cut material from the development site, to create a transitional zone between the developable area and development site perimeter and to provide visual mitigation where necessary;
 - Up to 100,000 sqm (1,076,391sqft) of mixed Class B2, Class B8 and Class E(g)(iii) ~~(office, research and development and industrial)~~ floorspace;
 - Up to a maximum of 10% Class B2 / Class E(g)(iii) ~~(office, research and development and industrial)~~;
 - Maximum development height of +117.8m AOD at the less sensitive westernmost Plot A1 adjacent to the M42 motorway;
 - ~~Reduced~~ maximum development height of +113m AOD at Plot A2, north of Plot A1 closer to Birchmoor;
 - ~~Reduced~~ maximum development height of ~~+112m~~ +111m AOD at the easternmost Plot B1, closer to Dordon;
 - ~~Reduced maximum development height of +102m AOD at Plot B2, at the entrance to the site;~~
 - Up to 150 space overnight lorry parking facility;
 - Up to 400 sqm amenity ~~block building~~ for overnight lorry parking facility (shop, restaurant/takeaway, ~~laundry, gym~~, toilets, changing facilities, showers, etc);
 - Creation of substantial landscaped buffer zones to the development site perimeter (in addition to the off-site areas for potential mitigation), as follows:
 - North - an extensive landscape buffer to the north of Plot A2 extending to ~~135m~~ 134m at its widest, reducing to 75m at the closest point to Birchmoor;
 - East - an extensive landscape buffer to the east of Plot A1 extending to ~~107m~~ 106m at its widest reducing to ~~52m~~ 49m to the north-east of Plot A2, ~~and extending to 65m to the east of Plot B1 and Plot B2~~ and a minimum ~~37m~~ 35m to the north-east of Plot B, where proposed building heights are ~~lower lowest~~;
 - South - a minimum 35m to the south of Plot A1 extending to ~~50m~~ 58m in the south-west corner of the plot close to J10 M42 and 35m-37m to the south of Plot B2; ~~of Plot B1 and over 58m in the south west corner of the site close to J10 M42;~~

- West - a minimum 10m landscape buffer to the west of Plot A1 and Plot A2, where existing screening vegetation for the M42 motorway is extensive and mature.

5.3.8. No other proposed development parameters have changed.

5.4 CONSULTATION

5.4.1. As part of the EIA process and in addition to the formal consultation undertaken in conjunction with the scoping process, technical consultation with a range of statutory and non-statutory consultees has been ongoing since October 2020.

5.4.2. Details of the technical consultation undertaken for each assessment is provided in the respective technical chapters.

5.4.3. Details of the public consultation undertaken is set out in the Statement of Community Engagement (SCE).

5.5 APPROACH TO THE ASSESSMENT OF THE PROPOSED DEVELOPMENT

5.5.1. This section outlines the phases of the proposed development that have been assessed, together with the approach to the baseline conditions, future baseline conditions, cumulative effects and design tolerances. It also sets out the overarching approach to the EIA, together with project specific requirements for the assessment of effects.

5.5.2. The proposed development has been assessed against the description, design principles and parameters as detailed in **Chapter 3: Description of the proposed development**. The maximum extent of the planning application boundary, total floorspace and buildings heights has been assessed as the worst-case situation. There is therefore some degree of flexibility to allow the proposed development to evolve (i.e., reduce in size) if necessary.

BASELINE SCENARIO

5.5.3. Baseline information (environmental characteristics and conditions) has been collated, based upon surveys undertaken and desk based information available at the time of the assessment. Technical chapters 6 to 14 provide details of the baseline information and a summary is provided in **Chapter 2: The Existing Site**. Any limitations establishing the baseline are described in technical chapters 6 to 14.

5.5.4. There are slight variances across the ES depending on the use of existing data obtained through other sources and the dates when surveys were undertaken. This has been clearly outlined within technical chapters 6 to 14.

5.5.5. The dates of surveys and the dates when data sources have been accessed are provided within technical chapters 6 to 14.

FUTURE BASELINE

5.5.6. Schedule 4(3) of the EIA Regulations 2017 requires consideration of the likely evolution of the current state of the environment (baseline scenario) in the absence of the proposed development, as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge (the 'future baseline'). Whilst there are considerable limitations to the predictions that can be made about natural baseline conditions at a future point in time, some assessments require projections to account for future

change, such as traffic growth. The ES topic areas that have considered the future baseline are as follows:

- **Transport, traffic and highways** – future baseline scenarios assessed for 2026 and 2031, as requested by National Highways;
- **Air quality** – future baseline scenarios assessed for 2026 and 2041.

5.5.7. Due to the aforementioned limitations, necessary assumptions and lack of evidence associated with the future baseline (i.e., it cannot be accurately measured), a detailed consideration of the effects of the proposed development against the future baseline would generally not result in a robust assessment. However, consideration has been given, in descriptive terms, within each relevant technical chapter to likely significant environmental effects arising from the proposed development in relation to the future baseline.

ASSESSMENT OF MAJOR ACCIDENTS AND DISASTERS

5.5.8. Schedule 4(8) of the EIA Regulations 2017 states that an ES must include the following:

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

5.5.9. An assessment of major accidents and disasters has not been scoped into this ES.

ASSESSMENT OF HEAT AND RADIATION

5.5.10. Schedule 4(5)(c) of the EIA Regulations 2017 states that an ES must include the following:

“A description of the likely significant effects of the development on the environment resulting from, inter alia:

(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste”

5.5.11. An assessment of heat and radiation has not been scoped into this ES. Bespoke ES chapters and associated assessment are however provided in respect of noise and vibration and air quality. The requirement for a detailed lighting scheme would be conditioned to any planning consent forthcoming.

ASSESSMENT CRITERIA

5.5.12. The classification of each effect identified has been assessed based on the magnitude of change (or impact) due to the proposed development and the sensitivity/value of the affected receptor to change, as well as a number of other factors that are outlined in more detail below. The classification of residual effects has been assessed with regard to the extent to which additional mitigation measures will avoid, prevent, reduce or, if possible, offset adverse effects.

5.5.13. The assessment of likely effects presented in technical chapters 6 to 14 have taken into account a number of criteria to determine whether or not the likely effects are significant. Wherever possible and appropriate, the effects have been assessed quantitatively. The following criteria have been taken into account when classifying the likely effects:

- Relevant legislation and planning policy;
- International, national, regional and local standards;
- Likelihood of occurrence of the effect;
- Geographical extent of effect;
- Sensitivity and/or value of the receptor;
- Magnitude and complexity of impact;
- Whether the effect is temporary or permanent;
- Duration (short, medium or long-term), frequency and reversibility of effect;
- Whether the effect is direct or indirect, secondary or transboundary;
- Inter-relationship between different effects (both cumulatively and in terms of likely effect interactions); and
- The outcomes of consultations.

5.5.14. Where factor specific methodology deviates from this approach, for example as a result of following factor specific guidance, this is set out in the methodology section of the technical chapter.

SENSITIVITY/VALUE OF RECEPTORS

5.5.15. The sensitive receptors considered within this ES are identified within technical chapters 6 to 14. The sensitivity of these receptors to change is also defined within technical chapters 6 to 14 and has been determined where available and appropriate by quantifiable data, the consideration of existing designations and professional judgement. The categories used (very high, high, medium, low and negligible), unless otherwise stated, are shown in **Table 5-1**. Where factor specific methodology deviates from this approach, for example as a result of following factor specific guidance, this is set out in the methodology section of the technical chapter.

MAGNITUDE OF CHANGE (IMPACT)

5.5.16. The magnitude of change (impact) is predicted as a deviation from the established baseline conditions, as a result of the proposed development. The magnitude of these changes is also defined within technical chapters 6 to 14 and has been determined where available and appropriate by quantifiable data, available appropriate national and international standards or limits (World Health Organisation (WHO) Limits, European Union (EU) Quality Standards, etc.) and professional judgement. The scale used (major, moderate, minor, negligible and no change), unless otherwise stated, is shown in **Table 5-1**.

5.5.17. The magnitude of change identified is based on the peak potential magnitude of change, i.e., the greatest likely magnitude of change that may be experienced by a sensitive receptor (existing or proposed).

CLASSIFYING EFFECTS

5.5.18. Determining the classification of effects has been undertaken using professional judgements (assumptions and value systems) that underpin the attribution of significance. Each effect has been assessed against the sensitivity of the receptor and the magnitude of change, as shown in **Table 5-1**. Where more than one effect classification exists for any given scenario (e.g., slight or moderate), professional judgement is used to assign a single effect classification.

Table 5-1 - Matrix for Classifying Effects

		Magnitude of Change (Impact)				
		No Change	Negligible	Minor	Moderate	Major
Sensitivity/Value	Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
	High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
	Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
	Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

- 5.5.19. The terms as used within **Table 5-1** have been defined below, applying to both beneficial and adverse effects:
- **Very Large effect:** effects at this level are material in the decision-making process;
 - **Large effect:** effects at this level are likely to be material in the decision-making process;
 - **Moderate effect:** effects at this level can be considered to be material decision-making factors;
 - **Slight effect:** effects at this level are not material in the decision-making process; and
 - **Neutral effect:** no effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.
- 5.5.20. Unless otherwise stated in the technical chapters of this ES, effects that are classified as **moderate or above** are considered to be significant. Effects classified as below **moderate** are considered to be not significant.
- 5.5.21. Tables summarising the potential effects associated with each factor, required mitigation measures and residual effects are provided at the end of each technical chapter. The tables provide a clear distinction of the type of effect:
- Beneficial or adverse;
 - Permanent or temporary;
 - Direct or indirect;
 - Short, medium or long-term;
 - Secondary, cumulative or transboundary; and
 - Significant or not significant.
- 5.5.22. In terms of the duration of an effect, short-term has been considered as 1 year (or below), a medium-term effect has been considered to be 1 to 15 years in duration and a long-term effect has been considered to be greater than 15 years in duration. Any variation to these definitions arising, for example, from differences in assessment methodology or guidance is explained in technical chapters 6 to 14.

MITIGATION AND MONITORING

- 5.5.23. Additional (secondary and tertiary) mitigation describes actions that will require further activity in order to achieve the anticipated outcome, and measures that will be required regardless of any EIA assessment, as it is imposed, for example, as a result of legislative requirements and/or standard sectoral practices. Examples of secondary mitigation include the detailed design, for example to comply with parameters and limits set by the outline planning consent and conditions, such as the adherence to specific noise limits or the provision of a Travel Plan. Examples of tertiary mitigation include considerate contractor's practices that manage activities which have potential nuisance effect (e.g., through the implementation of a Construction Environmental Management Plan).
- 5.5.24. Where likely significant adverse effects have been identified in the assessment, measures to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment are described. Monitoring is required where there are significant adverse residual effects. In some cases, for instance where there is uncertainty of residual effects remain, it may also be appropriate to implement monitoring.
- 5.5.25. Proposed additional mitigation and monitoring measures are set out within technical chapters where necessary.

5.6 CUMULATIVE EFFECTS

- 5.6.1. Schedule 4(5)(e) of the EIA Regulations 2017 states that the ES should include a description of the likely significant effects of the development on the environment resulting from:
- 'the cumulation of effect with other existing and / or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.'*
- 5.6.2. Regulation (4)(2)(e) refers to the need to assess:
- 'the interaction between the factors referred to in sub-paragraphs (a) to (d).'*
- 5.6.3. There is no widely accepted methodology or best practice for assessing cumulative effects, although various guidance documents exist. The following approach has been adopted for the assessment of cumulative effects, based on previous experience, the types of receptors being assessed, the nature of the proposed development, the other developments under consideration and the information available to inform the assessment. The approach was outlined in the EIA Scoping Report (**Appendix 1.1**).
- 5.6.4. Effect interactions, or intra-project effects, are the combined or synergistic effects caused by the combination of effects of the proposed development on a particular receptor which may collectively cause a greater effect than individually. In-combination, or inter-project effects are the combined effects of the proposed development on a common receptor together with other developments.
- 5.6.5. Not all technical chapters have cumulatively assessed inter-project/in-combination effects with other developments as the assessment of cumulative effects is not applicable to all technical chapters.
- 5.6.6. Where inter-project/in-combination effects have been considered, these are set out in the relevant technical chapters, such as the Traffic, Transport and Highways, Noise and Air Quality chapters, which have taken into account committed development through use of the WCC strategic traffic model that formed the basis of the NWBC Local Plan assessment, as agreed with WCC for the TA modelling exercise.

5.6.7. Assessment of intra-project cumulative effects, where relevant, are presented in technical chapters 6 to 14.

5.7 ENVIRONMENTAL ENHANCEMENT

5.7.1. Although not a requirement of the EIA Regulations 2017, opportunities for environmental enhancement are also explored in technical chapters 6 to 14, where relevant and feasible. However, environmental enhancement measures are not taken account of in the assessment of likely significant effects.

5.8 LIMITATIONS AND ASSUMPTIONS

5.8.1. Schedule 4(6) of the EIA Regulations 2017 states that an ES should include

'...details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved...'

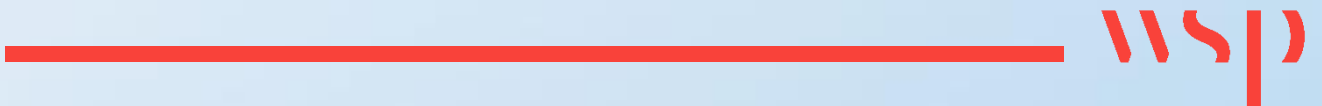
5.8.2. Where there are limitations or assumptions used within the EIA, these are clearly identified in this ES. Assumptions specific to certain assessments have been identified in the appropriate technical chapters 6 to 14.

5.9 REFERENCES

- Reference 5.1: Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Statutory Instrument 2017 No. 571.
- Reference 5.2: Planning Practice Guidance. [Online] accessed via <https://www.gov.uk/government/collections/planning-practice-guidance>
- Reference 5.3: IEMA Environmental Impact Assessment Guide to Shaping Quality Development. [Online] accessed via https://www.iema.net/assets/uploads/iema_guidance_documents_eia_guide_to_shaping_quality_development_v7.pdf
- Reference 5.4: Planning Portal [Online] accessed via <https://www.planningportal.co.uk/>
- Reference 5.5: The Conservation of Offshore Marine Habitats and Species Regulations 2017. Statutory Instrument 2017 No. 1013

6

HIGHWAYS, TRAFFIC AND TRANSPORT



6 HIGHWAYS, TRAFFIC AND TRANSPORT

6.1 INTRODUCTION

- 6.1.1. Bancroft Consulting were appointed by the Applicant to provide highways and transportation advice in respect of the proposed development.
- 6.1.2. This chapter reports the outcome of the assessment of likely significant transport-related effects arising from the proposed development. This chapter focuses on the transport impacts of the operational stages of the proposed development, which are considered to represent the greatest change in conditions, in particular HGV movements. A full description of the proposed development is set out in Chapter 3 of the ES.
- 6.1.3. This chapter has been informed by the Transport Assessment (TA) produced to support the proposed development and is included as **Appendix 6.1 of Volume 3**. The TA details all the transport modelling and assessment work that underpins this chapter. The TA should therefore be read to obtain a detailed consideration of the highways and transport issues associated with the development.
- 6.1.4. In addition, further information is provided in the Framework Travel Plan (FTP) included at **Appendix 6.2 of Volume 3** of this ES. The TA and FTP have both been produced following detailed discussions with National Highways (NH) and Warwickshire County Council (WCC) and with due regard to all applicable local and national planning policy and guidance.

6.2 POLICY CONTEXT

- 6.2.1. This chapter of the ES has been prepared with due regard to the 'Guidelines for the Environmental Assessment of Road Traffic', Guidance Notes No. 1 published in 1993 by the Institute of Environmental Management and Assessment (IEMA). In addition, consideration has also been given to LA104 of the Design Manual for Roads and Bridges (DMRB), which covers requirements for Environmental Assessments.
- 6.2.2. The National Planning Policy Framework (NPPF) was updated in July 2021. Paragraph 110 states that:

“In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

b) safe and suitable access to the site can be achieved for all users;

c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and

d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.”

- 6.2.3. Paragraph 111 is clear 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.*”
- 6.2.4. The North Warwickshire Local Plan was adopted on 29 September 2021. Policy LP23 (Transport Assessments) states the following:
- Transport Assessments appropriate to the scale of development proposed, will be required to accompany development proposals (including that that is below the indicative threshold in Appendix G). Assessments will also be required where there is a cumulative effect created by additional floor space or traffic movement on the site or in the vicinity, or where there are demonstrable shortcomings in the adequacy of the local transport network to accommodate development of the scale proposed.*
- These Assessments should address impacts on both the local and strategic highway networks and should be scoped so as to be bespoke to the nature of the development proposals. They should also ensure that proposals provide appropriate infrastructure measures to mitigate the adverse impacts of development traffic and other environmental and safety impacts either individually or cumulatively. Appropriate provision for, or contributions towards the cost of any necessary highway improvements should also be addressed. Widening opportunities to access new developments for all sections of the community will need also to be addressed through the provision and enhancement of public transport services and facilities together with walking and cycling facilities.*
- 6.2.5. ‘Guidelines for the Environmental Assessment of Road Traffic’ defines a list of potential environmental impacts within Part C. These include several items related to highways and transportation (such as driver delay), but also include additional elements where traffic can contribute to the cumulative impact (such as the contribution of traffic noise to overall noise levels). This chapter focusses purely on direct highways and transportation related impacts, while those impacts where traffic only contributes towards the overall effect (Chapter 7 – Noise; and Chapter 8 - Air Quality) are considered in separate chapters.
- 6.2.6. Based on the above distinction, this chapter specifically considers the following potential impacts arising from purely highways and transportation related changes to the local environment:
- Severance (as caused by increased traffic flows within a community);
 - Driver Delay;
 - Pedestrian Delay;
 - Pedestrian Amenity;
 - Fear and Intimidation (in pedestrians, arising from vehicular traffic);
 - Accidents and Safety; and,
 - Hazardous Loads.

6.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

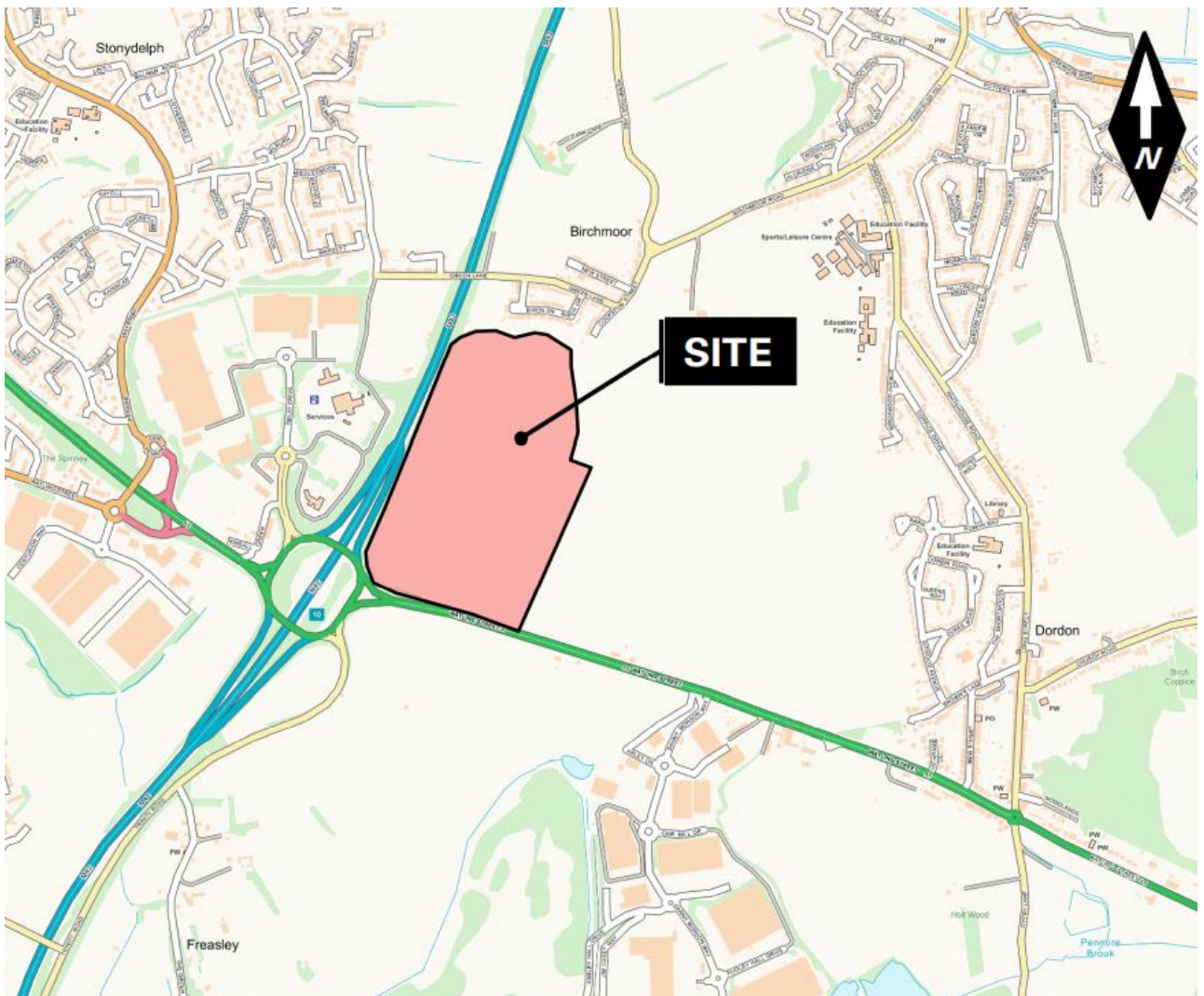
- 6.3.1. The scope of the TA was discussed extensively in advance of its submission with officers of WCC, Staffordshire County Council (SCC) and NH (formerly Highways England) as the highway’s authorities responsible for the adjoining road network. A Scoping Study was submitted to WCC, acting as the Local Highway Authority (LHA), and NH, as the Strategic Highway Authority (SHA), as part of formal pre-application consultation in October 2019. Key extracts from the Scoping Study are included in the Appendix A of the TA.

6.3.2. Consultation has taken place with officers from both WCC and NH, including meetings in November 2019 and March 2020 and a series of emails during this period and onwards. Consultation has included discussion on a wide variety of transport matters. WCC provided its formal response to the Scoping Study by email in May 2020, a detailed summary of the scoping responses is provided within Section 2 of the TA.

6.3.3. The ES study area includes the proposed development, located within the red line planning application boundary, and extends beyond to take into account the adjacent existing highway network. The defined study area identified in the TA comprising Junction 10 of the M42 motorway, the proposed site access, and the existing Birch Coppice Business Park access are shown in **Image 6.1**. The study area for further detailed assessment comprises the following junctions:

- M42/A5 Junction 10 Signal Controlled Gyratory
- Proposed A5/Site Access Signal Controlled Junction
- A5/Birch Coppice Access Signal Controlled Junction

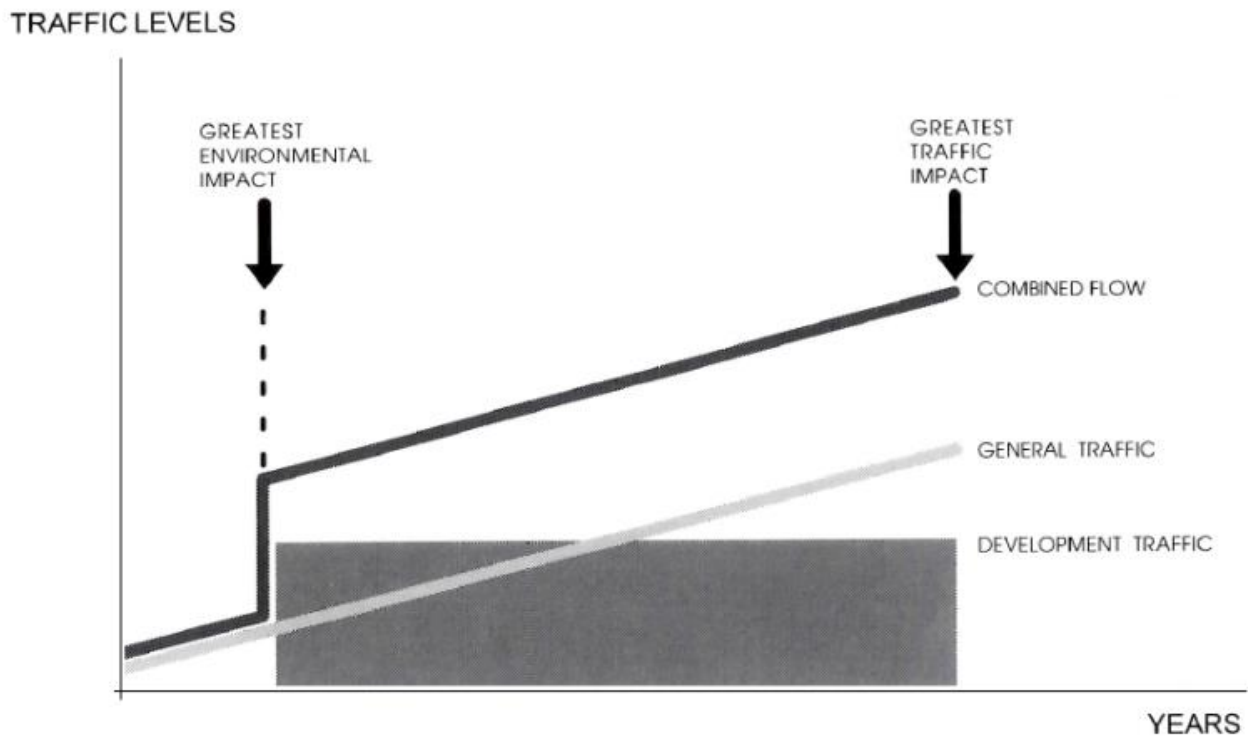
Image 6-1 - TA Site Location Plan



- 6.3.4. For the purposes of this ES, impacts have been assessed on a link basis rather than a junction basis. Most habitats, animals, persons, dwellings, and businesses that may be affected will be located next to a highway link (such as the A5), as opposed to the specific junctions identified above.
- 6.3.5. The TA provides detailed analyses to calculate the modelled proportional distribution of development trips passing through the immediate study area, comprising the M42/A5 junction to the west and A5/Birch Coppice Access to the east.
- 6.3.6. As detailed in the TA, the majority of development traffic is expected to arrive and depart the site via the west, with a split of around 80% associated with the west and 20% with the east. The traffic model output data also confirms that development traffic associated with the east is primarily focused on the A5 corridor with no significant assignment into the surrounding local road network, such as Long Street via the Dordon Island roundabout junction. Considering the assignment to the west, the key draw for development traffic is associated with the west (A5) and south (M42), with around 45% of trips associated with the A5 (west) and 25% associated with the M42 (south).
- 6.3.7. Based on the above, detailed turning movements were extracted from WCC's Paramics local area strategic traffic model for the following scenarios:
- 2021 Reference Case plus development
 - 2026 Reference Case plus development
 - 2031 Reference Case plus development
 - 2031 Local Plan plus development
- 6.3.8. As detailed in the TA, the future year scenarios have been agreed with WCC and NH using WCC's adopted local area strategic traffic model for the North Warwickshire Borough.
- 6.3.9. The data in **Appendix 6.3 of Volume 3** is split into the AM and PM peak hour flows travelling eastbound and westbound on the A5 Links and the combined totals. Information about the number of HGVs within each flow are also provided. All numerical assessments carried out in this ES chapter utilise the highest overall flows recorded (or the greatest percentage change) for the purposes of establishing the magnitudes of impact that may occur.
- 6.3.10. 'Guidelines for the Environmental Assessment of Road Traffic' recommends that the study area for environmental assessment be informed by the following two rules:
- Rule 1 -include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles [HGVs] will increase by more than 30%)
 - Rule 2 -include any other specifically sensitive areas where traffic flows have increased by 10% or more
- 6.3.11. The first threshold, Rule 1, suggests that a 30% increase in traffic or HGVs should be used in normal circumstances. This broadly relates to the potential impact on pedestrians from increases in traffic or the capacity performance of links and nodes.
- 6.3.12. The second threshold of a 10% increase in traffic is outlined in Rule 2 and is used in sensitive areas such as accident 'black spots', schools and links with high pedestrian flows. It is generally not appropriate to consider links or nodes where traffic flows are forecast to change by less than 10% unless there are significant changes in the composition of traffic, such as a large increase in the number of HGVs.

- 6.3.13. Considering the generally strategic nature of highway network in the vicinity of the site and the ongoing development activity taking place in the vicinity of the site, Rule 1 is the preferred approach for all highway links.
- 6.3.14. Figure 3.4 of ‘Guidelines for the Environmental Assessment of Road Traffic’ highlights the difference between the greatest environmental impact of a scheme (which should be assessed by an ES), and the greatest traffic impact of a scheme (the assessment of which is handled within a TA). In terms of environmental impact, the greatest (and most perceptible) effects will be realised when levels of background traffic are lowest, i.e. immediately after the scheme opens. In contrast, the assessment of traffic impacts requires that a future year sometime after opening is examined. For convenience, Figure 3.4 of “Guidelines for the Environmental Assessment of Road Traffic” is reproduced below as **Image 6-2**, demonstrating this effect:

Image 6-2 - Environmental and Traffic Impact from a New Development



- 6.3.15. On this basis, the application of Rule 1 has been made with reference to the TA scenarios of 2021 ‘Without Development’ and ‘With Development’ traffic flow scenarios, both including the committed development traffic flows.
- 6.3.16. Sheet 6c of **Appendix 6.3 of Volume 3** shows the forecast percentage changes in total traffic flow and HGV flows for the links within the TA study area. This data is presented for the AM peak hour and PM peak hour. This demonstrates that when applying Rules 1 and 2 as detailed above, the ES study area is limited, and that the level of impact falls below the thresholds on all links identified. Notwithstanding, consideration of the impacts within the TA study area are considered below.

SEVERANCE IMPACT ASSESSMENT METHODOLOGY

- 6.3.17. DMRB LA 112 ‘Population and human health’ defines severance as follows:

“The extent to which members of communities are able (or not able) to move around their community and access services/facilities.”

- 6.3.18. Both the DMRB and ‘Guidelines for the Environmental Assessment of Road Traffic’ highlight that the sensitivity of an area (and by extension the links within it) will be influenced by the presence of more vulnerable pedestrians such as children and the elderly. Additionally, it is obvious that areas with higher levels of pedestrian activity will be more sensitive to severance. On this basis, it has been decided to rate the sensitivity of each link in the study area to severance as follows:
- **Low:** Rural routes without significant developed frontages or built-form
 - **Medium:** Rural routes with frequent developed frontages or built-form
 - **High:** Urban and suburban routes, which are likely to feature significant levels of pedestrian activity, and also be in close proximity to community facilities and increased numbers of vulnerable pedestrians
- 6.3.19. As stated within ‘Guidelines for the Environmental Assessment of Road Traffic’, ‘The Manual for Environmental Appraisal’ (DoT, 1983) found that severance impacts were related to the change in traffic flow on a link, with the relative change being linked to magnitude of impact, as follows:
- **30% change:** Slight [Minor] change to severance
 - **60% change:** Moderate change to severance
 - **90% change:** Substantial [Major] change to severance
- 6.3.20. In the context of these changes, increases in traffic flow have been considered to have adverse impacts, while reductions in traffic flow have been considered to have beneficial impacts.
- 6.3.21. Having established the sensitivity of each link to severance and the magnitude of severance impact on the link, the standard ‘significance of effects’ matrix will be utilised to determine the overall significance of any severance effects.

DRIVER DELAY ASSESSMENT METHODOLOGY

- 6.3.22. In simple terms ‘driver delay’ is the extent to which a driver is impeded during a journey, such that they are unable to drive at a (legal) speed of their choice and are unable to proceed freely through junctions on the network.
- 6.3.23. Since all the junctions and links within the study area can be considered important to the free flow of traffic within part of North Warwickshire, it is considered that they all have medium levels of sensitivity to increased driver delay.
- 6.3.24. The magnitude of an impact on driver delay is usually quantified only for junctions (as opposed to links), and this is assessed using various junction modelling software packages such as ARCADY, PICADY, and LinSig. The ‘Guidelines for the Environmental Assessment of Road Traffic’ notes at Paragraph 4.34 that these “...delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.” On this basis and given the extensive assessments of junction delay already undertaken within the TA, it is proposed that only those junctions found by the TA to exceed capacity in 2021 (either without or with the Proposed Development) will be discussed within this ES.
- 6.3.25. The software packages utilised to model delay contain multiple delay parameters, both for individual links approaching the junctions, and the junction as a whole. In addition, the capacity of a junction can vary significantly throughout the day owing to the tidality of traffic flows and the level of demand.

As such, it is proposed that the magnitude of impact at any given junction shall be discussed and determined on a qualitative basis, examining the results of capacity analysis within the TA using sound engineering judgment.

PEDESTRIAN DELAY ASSESSMENT METHODOLOGY

- 6.3.26. Pedestrian delay occurs when there is difficulty crossing a heavily trafficked road. The IEMA 'Guidelines for the Environmental Assessment of Road Traffic' notes that studies have shown that pedestrian delay is perceptible or considered significant beyond a delay threshold of 10 seconds, for a link with no crossing facilities. It goes on to say that a 10 second pedestrian delay in crossing a road broadly equates to a two-way link flow of approximately 1,400 vehicles per hour. Noting that the provision of crossing facilities, the geometric characteristics of the road and the traffic volume, speed and composition are all factors that can determine delay.
- 6.3.27. However, the 'Guidelines for the Environmental Assessment of Road Traffic' also advises that quantitative thresholds should be avoided, with professional judgement to be used in its place to determine the significance of effects, based on the expected level of pedestrian activity, road traffic conditions and the level of service provided for pedestrians.

PEDESTRIAN AMENITY ASSESSMENT METHODOLOGY

- 6.3.28. Within 'Guidelines for the Environmental Assessment of Road Traffic' pedestrian amenity is very broadly defined as the overall pleasantness of a pedestrian's journey. It can be affected by traffic flows, pavement widths, the proximity of pedestrian routes to the live carriageway, noise, pollution and the interactions between pedestrians and traffic
- 6.3.29. The 'Guidelines on the Environmental Assessment of Road Traffic' also suggest a screening threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow is halved or doubled. Based on the guidance given, pedestrian amenity is actually influenced by multiple factors which are assessed independently within this or other chapters of this ES. As such, it is considered that a separate assessment of this is not appropriate, as any specific issues impacting on pedestrian amenity will be better highlighted and addressed by the relevant part of this ES.

FEAR AND INTIMIDATION ASSESSMENT METHODOLOGY

- 6.3.30. The 'Guidelines on the Environmental Assessment of Road Traffic' states that fear and intimidation are caused by high vehicle flows, high portions of traffic comprising HGVs, and by high vehicle speeds. These cause pedestrians to perceive a degree of hazard. It also notes that they are increased by the lack of (or substandard provision of) pedestrian footways.
- 6.3.31. It is considered that the sensitivity of routes to fear and intimidation is broadly similar to that for severance (detailed above). However, in addition to this it is considered that any route lacking reasonable pedestrian routes should be considered one level more sensitive than a similar route with appropriate such provision.
- 6.3.32. In the absence of commonly agreed thresholds for judging the significance of likely fear and intimidation effects, professional judgement has been applied. Considerations include volume of traffic, percentage of HGVs and the proximity of pedestrians to traffic. In addition, the speed of traffic, the number of turning movements, and the level of vulnerable groups has been considered.

TRAFFIC ACCIDENTS AND SAFETY ASSESSMENT METHODOLOGY

- 6.3.33. With regard to accidents and safety, the TA examined the Personal Injury Accident (PIA) records for the local area and determined sites of potential concern for further analysis, (referred to as 'clusters'). Detailed consideration is presented in Chapter 4 of the TA, which identifies and reviews the incidents at cluster sites recorded at M42 Junction 10, a single cluster of incidents at the A5 Birch Coppice access and also considers other incidents within the study area.
- 6.3.34. For the purposes of this ES, it has been considered appropriate to perform an accident and safety impact assessment at the identified cluster sites at Junction 10 of the M42 and the A5. Initially all such junctions and links have been considered to be of low sensitivity, but shall be upgraded by one level if they featured more than 10 PIAs. They shall also be upgraded one level if they included any fatal accidents. Where a link has a cluster of accidents and additional isolated accidents only those within the cluster have been considered, as it is only at these locations that a specific accident hazard may have been identified.
- 6.3.35. 'Guidelines for the Environmental Assessment of Road Traffic' supports an initial assessment of impact magnitude based on vehicle-kilometres. Given in most cases the length of a link or area of a junction remain near constant, it is considered reasonable to use vehicle flows as a proxy for this. As such, a percentage change in vehicle flows will lead to a similar change in accident risk.
- 6.3.36. It is considered a reasonable approximation to multiply the percentage change of vehicle flow (and thus accident risk) by the number of accidents that occurred in the five-year study period examined by the TA, in order to estimate the number of additional accidents that may occur in the future. For example, if the proposed development causes a 10% increase in flow through a cluster site that had 10 accidents occur during the TA study period, it is reasonable to suppose that one additional accident may occur during a future study period of similar length.
- 6.3.37. Having due regard to the above, a change of 1 PIA has been considered minor, or 2 to 4 PIAs has been considered moderate, and of 5 PIAs or more (i.e. one or more per year over a five-year study period) have been considered major. However, where there is reason to believe that changes arising from the proposed development would make a route more or less safe, such effects have also been considered prior to determining the likely magnitude of effect of the proposed development on a given junction or link.
- 6.3.38. Increased accident risk is obviously considered to have adverse impacts, while reductions in risk have been considered to have beneficial impacts.
- 6.3.39. Having established the sensitivity of each junction or link to accidents, and the magnitude of impact, the standard 'significance of effects' matrix will be utilised to determine the overall significance of any accident and safety effects.

HAZARDOUS LOADS ASSESSMENT METHODOLOGY

- 6.3.40. Given the nature of the proposed development it is not envisaged that it will generate any hazardous loads once operational. There may be very occasional hazardous loads delivered to the site during the construction period. These would most likely be over-size loads, as opposed to hazardous substances. However, given the very low instance of such loads the resultant impacts are unlikely to be significant and this ES has not therefore considered such loads in detail. Nonetheless, it is intended that the impacts of these could be managed by a Construction Environmental Management Plan (CEMP) prepared and on a 'load-by-load' basis during the construction phase.

DETERMINING THE MAGNITUDE OF TRANSPORT IMPACTS

6.3.41. **Table 6.1** details the assessment framework adapted from the ‘Guidelines for the Environmental Assessment of Road Traffic’ to be used in the assessment to determine the magnitude of transport impacts.

SIGNIFICANCE CRITERIA

6.3.42. The significance level attributed to each effect has been assessed based on the sensitivity/value of the affected receptor(s) and the magnitude of change arising from the proposed development, as well as a number of other factors that are outlined in more detail in Chapter 5: Approach to EIA. The sensitivity of the affected link / receptor is assessed on a scale of high, medium, low and negligible, and the magnitude of change is assessed on a scale of large, medium, small, negligible and no change, as set out in Chapter 5: Approach to EIA.

Table 6-1 - Determining the Magnitude of Transport-related Changes

Impact	Magnitude of Change			
	Negligible	Minor	Moderate	Major
Severance	Change in hourly traffic flows of less than 30%	Change in hourly traffic flows of 30% - 60%	Change in hourly traffic flows of 60% - 90%	Change in hourly traffic flows of over 90%
Driver Delay	Junction capacity and driver delay have been assessed using industry standard junction modelling software. The complete assessment results are included in the Transport Assessment (see Appendix 6.1 of Volume 3) and a summary is provided in this chapter.			
Pedestrian Delay	Two-way traffic flow < 1,400 vehicles per hour	A judgement based on the routes with two-way traffic flow exceeding 1,400 vehicles per hour in the context of their individual characteristics.		
Pedestrian Amenity	Professional judgement based on change in traffic volumes and class composition, pedestrian infrastructure quality and potential interactions between pedestrians and motorised traffic.			
Fear and Intimidation	Identified through combined assessments of Severance, Pedestrian Delay and Pedestrian Amenity.			
Traffic Accidents and Road Safety	The effects of increased traffic on accidents and safety are determined from existing accident records, national statistics, the type and quantity of traffic generated, journey lengths and the characteristics of the routes in question. The complete assessment results are included in the Transport Assessment (see Appendix 6.1 of Volume 3).			

EFFECT SIGNIFICANCE

6.3.43. The following terms have been used to define the significance of the effects identified and apply to both beneficial and adverse effects:

- **Major effect:** where the proposed development could be expected to have a substantial improvement or deterioration on receptors;

- **Moderate effect:** where the proposed development could be expected to have a noticeable improvement or deterioration on receptors;
- **Minor effect:** where the proposed development could be expected to result in a perceptible improvement or deterioration on receptors; and
- **Negligible:** where no discernible improvement or deterioration is expected as a result of the proposed development on receptors, including instances where no change is confirmed.

6.3.44. As set out in Chapter 5: Approach to EIA, effects that are classified as Moderate or above are considered to be significant. Effects classified as below moderate are considered to be not significant.

Table 6-2 - Significance of potential impacts

Receptor Sensitivity	Magnitude of Change				
	No Change	Negligible	Minor	Moderate	Major
High	No Effect	Negligible	Moderate	Major	Major
Medium	No Effect	Negligible	Minor	Moderate	Major
Low	No Effect	Negligible	Minor	Minor	Moderate
Negligible	No Effect	Negligible	Negligible	Negligible	Negligible

6.4 BASELINE CONDITIONS

6.4.1. The TA provides details of all network traffic flows for the relevant locations that have been extracted from the Paramics modelling exercise (using the local area strategic traffic model) for each scenario. The resulting 2021 morning and evening peak hour 'Reference Case – Without Development' flows throughout the defined study area (comprising Junction 10 of the M42, the proposed site access, and the existing Birch Coppice access) are summarised in **Image 6.3** and **6.4**, respectively (these can also be found in the Figures provided within the TA).

Image 6-3 - 2021 Reference – AM Peak (0800 to 0900) – Demand Flows

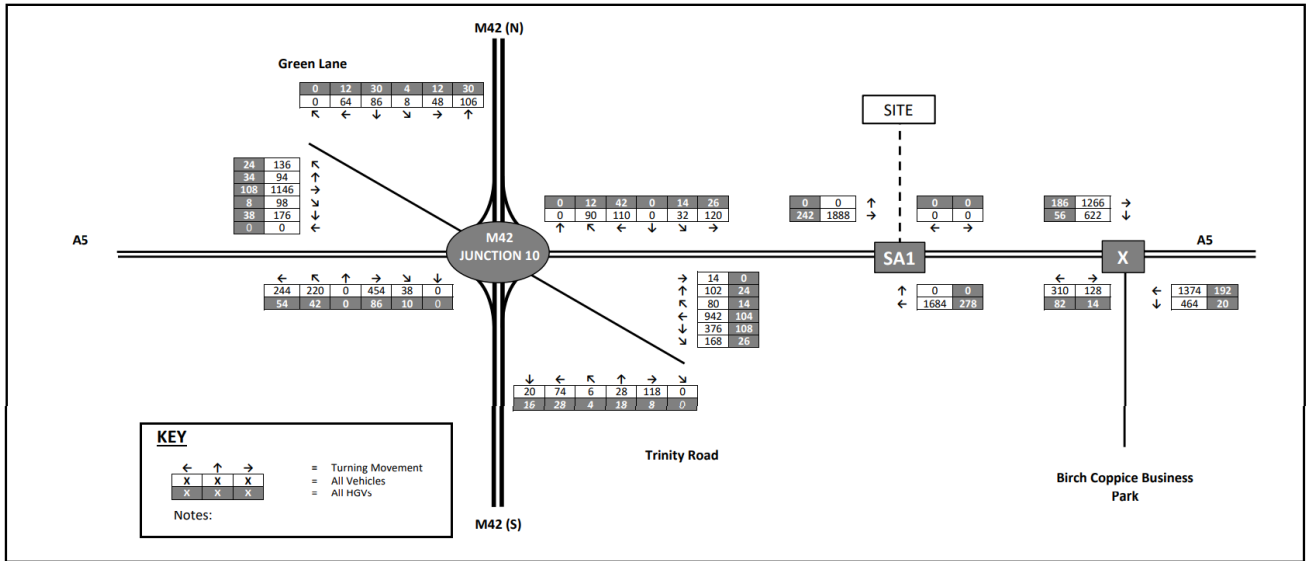
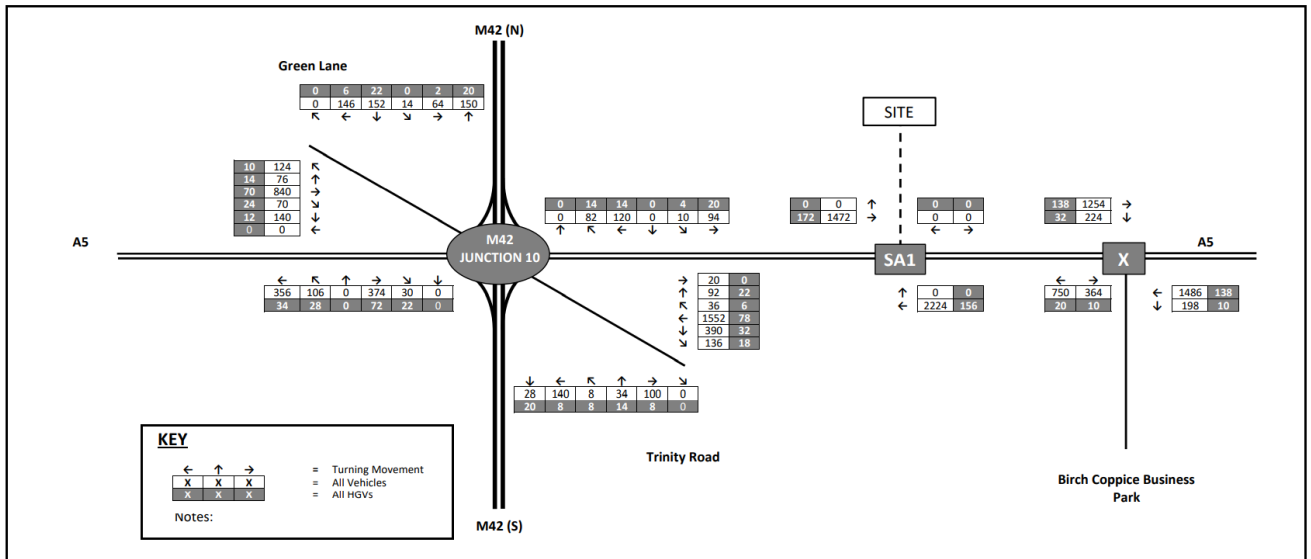


Image 6-4 - 2021 Reference – PM Peak (1700 to 1800) – Demand Flows



6.4.2. **Images 6.5 and 6.6** summarise the equivalent scenario but with development traffic included. As described in the TA, only demand flows have been used within this assessment to ensure a robust interpretation of impact has been undertaken. This scenario effectively demonstrates the ‘baseline’ traffic conditions for this assessment.

Image 6-5 - 2021 Reference + Development – AM Peak (0800 to 0900) – Demand Flows

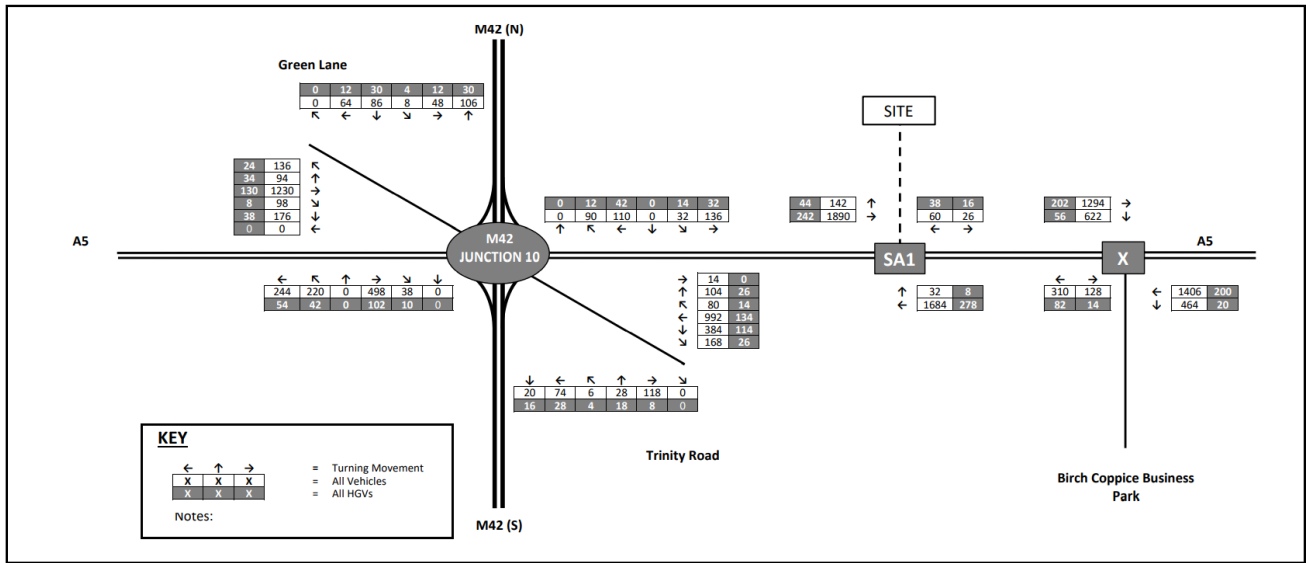
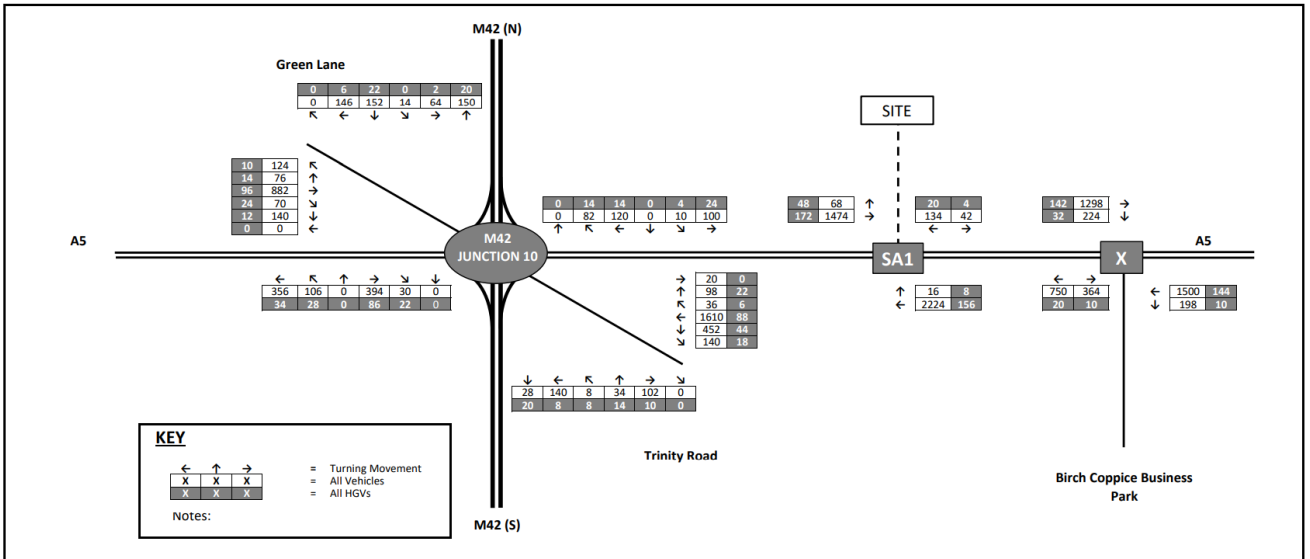


Image 6-6 - 2021 Reference + Development – PM Peak (1700 to 1800) – Demand Flows

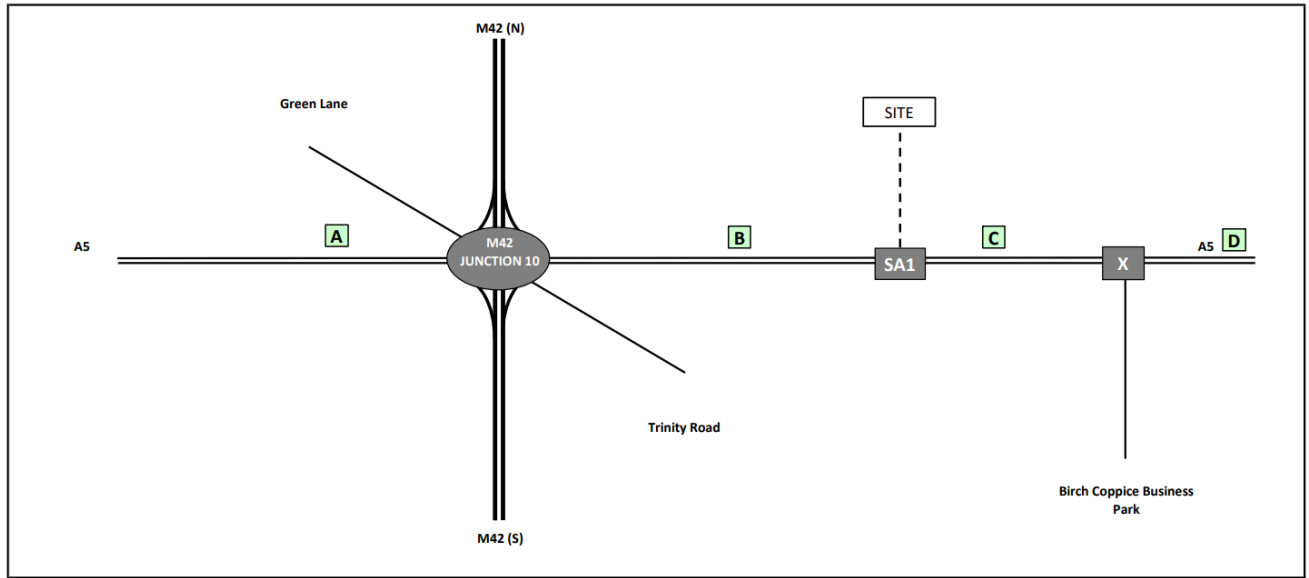


6.4.3. The baseline conditions required for this ES are essentially the same as those presented within the TA, and can be considered to comprise the following scenarios:

- 2021 Reference Case plus development
- 2026 Reference Case plus development
- 2031 Reference Case plus development
- 2031 Local Plan plus development

6.4.4. The TA includes detailed descriptions of the various links and junctions already referenced within this ES, including infrastructure pertaining to all modes of travel (i.e. including footways, cycleways, bus stops, the actual carriageways and so forth). The link network diagram is shown in **Image 6.7**. Traffic flows for these scenarios are summarised in **Appendix 6.3 of Volume 3** and can be examined in detail in the TA submitted as part of this application.

Image 6-7 - Location of ES Links



6.5 IDENTIFICATION AND VALUATION OF KEY IMPACTS (CONSTRUCTION AND OPERATIONAL)

SEVERANCE IMPACTS

6.5.1. Based on the methodology set out above, the severance impacts of the proposed development are detailed in **Table 6.3** below.

Table 6-3 - Severance Impacts

Link	Sensitivity	% Flow Change (Avg. Peak Hour)	Magnitude of Impact	Significance of Effect
A. A5 West of M42	Low	4%	Negligible	Negligible
B. A5 West of Site Access	Low	6%	Negligible	Negligible
C. A5 East of Site Access	Low	2%	Negligible	Negligible
D. A5 East of Birch Coppice Business Park	Low	2%	Negligible	Negligible

6.5.2. Based on the above it can be seen that the sensitivity of people walking is generally low, and the magnitude of change is negligible. Therefore, there is likely to be a negligible adverse residual effect on people walking (not significant).

6.5.3. **Table 6.3** demonstrates that the impacts on all links falls well below the 30% threshold and indeed below 10% in all locations, and therefore impacts would be negligible in all instances.

Driver Delay Impacts

- 6.5.4. The 2021 Reference Case traffic flows summarised in **Image 6.3** confirm two-way weekday morning peak hour traffic flows of 3572 vehicles on the A5 at the site frontage. Similarly, **Image 6.4** shows 3696 two-way vehicle movements for the evening peak hour.
- 6.5.5. As detailed in the methodology section of this ES chapter, a qualitative assessment of driver delay is to be undertaken within this ES for the junctions likely to be at or over-capacity in 2021. In terms of overall traffic increases from the proposed development to the east and west, on a junction-by-junction basis these are as follows:
- *Birch Coppice site access to the east* – The TA demonstrates proposed development traffic increases of 58 peak hour movements would only constitute a 1.6% increase in activity passing through the Birch Coppice site access junction and beyond.
 - *M42/A5 junction to the west* - taking the predicted 2021 link flow at the A5 of 3572 two-way movements, the proposed 202 development trips to the west would equate to a 5.7% increase at the eastern arm of the M42/A5 junction.
- 6.5.6. As described previously, the TA presents detailed assessment on a junction-by-junction basis for the following junctions:
- M42/A5 Junction 10 (Signal Controlled Gyratory)
 - A5/Birch Coppice Access (Signal Controlled Junction)
 - Proposed A5/Site Access (Signal Controlled Junction)
- 6.5.7. **M42 / A5 Junction 10:** Using 2021 Reference Case turning movements the junction operates beyond its theoretical limits of capacity during both the morning and evening peak hours. The morning peak hour presents the worst-case scenario with a PRC of -48.6% and a Total Delay of 311.21 pcu/hr, which changes to -61.5% and 388.48 pcu/hr when development traffic is assigned. An important point to note here is that delays cannot be accurately predicted under saturated conditions as the software makes no allowance for other effects that will in reality take place, such as displacement to another time period, mode, or route choice.
- 6.5.8. The results of the modelling clearly demonstrate how the junction has well established capacity issues and this extends back to previous decisions on similar employment development applications nearby. As such, it is considered that the proposed development would have a minor adverse significance of effect at this junction.
- 6.5.9. **A5 Watling Street / Birch Coppice Access:** Using 2021 Reference Case turning movements the junction would operate beyond the limits of its theoretical capacity in the morning peak hour with 2021 Reference Case flows showing a PRC of -3.8% without development traffic. This increases to 7.7% in the evening peak hour scenario (also without development). Projecting this assessment through to the 2031 Local Plan scenario, shows how the proposed development trips reduce the PRC to -4.1% in the morning peak hour, whilst in the evening peak this reduces to -1.6% (compared to -0.4% without development traffic).
- 6.5.10. These results demonstrate the negligible change in traffic conditions associated with the proposed development through this junction. As such, it is considered that the proposed development would have a minor adverse significance of effect at this junction.
- 6.5.11. **Proposed A5 / Site Access:** The modelling demonstrate that the junction would operate satisfactorily in all 2031 scenarios (i.e. Reference Case and Local Plan) during the morning and

evening peak periods. The lowest PRC value would be 5.6% during the 2031 Reference Case morning peak hour 'with development' scenario.

6.5.12. These results demonstrate the proposed site access layout would provide a safe and suitable layout with adequate capacity to accommodate the proposed development trips. As such, it is considered that the proposed development would have a minor adverse significance of effect at this junction.

Fear and Intimidation Impacts

6.5.13. Based on the changes described above and highlighted in the severance impacts assessment, it is apparent that the changes to traffic flows arising from the proposed development are insufficiently large to cause any notable changes to the fear and intimidation effects experienced by pedestrians.

Accidents and Safety Impacts

6.5.14. Based on the methodology detailed above, the accident and safety impacts of the proposed development are detailed in **Table 6-4**.

Table 6-4 - Accidents and Safety Impacts

Link / Junction	Accidents (2016 to 2020)	Sensitivity	% Flow Change (Avg. Peak Hour)	Magnitude of Impact	Significance of Effect
A5 West of M42 / (& M42 Junction 10)	33	Low	4%	Negligible	Negligible
A5 West of Site Access	4	Low	6%	Negligible	Negligible
A5 East of Site Access & East of Birch Coppice Business Park	11	Low	2%	Negligible	Negligible

6.5.15. The proposed development has negligible effects on local highway accidents and safety. The increase in traffic levels generated by the proposed development could result in an additional single PIA occurring at the Junction 10 of the M42 during a future study period of similar length. However, as identified in the TA there are several areas where the proposed development would deliver tangible and substantial highway safety benefits for both existing and proposed users of the highway network in this location. These can be summarised as follows:

- Signal controlled crossings within the proposed site access helping to reduce usage of the existing priority-controlled facility nearby.
- Provision of an internal link connecting the A5 to Birchmoor, thus offering a higher quality route for pedestrians and cyclists travelling between the A5 and areas to the north and west (particularly within Tamworth).
- Improved bus stop facilities at the northern edge of the A5, with a layout that segregates cyclists from pedestrians and includes standard merge and diverge tapers and a wider bus stop area.
- Reduction in overall vehicle speeds due to the proximity of an additional signal-controlled junction, thereby improving the overall environment for pedestrians and cyclists using the A5 corridor.

- Removal of existing parking laybys that do not meet current design requirements, in favour of a high-quality lorry parking facility for up to 150 vehicles, to include supporting facilities for drivers.

6.6 CUMULATIVE EFFECTS

- 6.6.1. To ensure that the ES provides a robust assessment of the traffic impacts, a review of proposed or possible future third party development projects, which may have a greater cumulative impact in conjunction with the development proposals, has been undertaken to inform this ES.
- 6.6.2. Committed development has been taken into consideration through using the WCC strategic traffic model that formed the basis of the Local Plan assessment, as agreed with NH and WCC for the TA modelling exercise, which informed all capacity analyses. The use of the WCC strategic traffic model flows ensures that full consideration has been given to all allocated sites, including sites H4, H5, E2 and E3 that are located nearby.

6.7 MITIGATION MEASURES

- 6.7.1. This ES chapter has not identified any adverse impacts rated as having more than a minor adverse significance of effect. **Table 6-5**, included at the end of this chapter, summarises all the impacts and effects examined, and the range of effect significance identified for each in relation to the local highway network.
- 6.7.2. The TA details several improvements primarily on the basis of providing sustainable transport benefits and not environmental issues. Although the need for these improvements was identified in isolation from preparation of this ES, they are relevant in terms of mitigation measures and are therefore discussed below.
- 6.7.3. The proposed development would deliver the following improvements that should serve to benefit both the proposed development and existing users alike:
- Provision of signal-controlled crossings at the proposed access on the A5 as safer alternative to the dropped kerb priority arrangement that exists to the east serving the bus stop.
 - Improvements to the existing bus stop facility with the segregation of cyclists and pedestrians to minimise potential conflict.
 - Enhanced links to the bus stops north of the site in Birchmoor.
 - Delivery of an internal shared footway/cycleway link that extends between the A5 and Birchmoor, ensuring that pedestrians and cyclists are able to bypass the Junction 10 of the M42 and gain access to the established network of employment facilities to the south, from Tamworth, Polesworth and Birchmoor.
 - Upgrading of existing public footpaths and bridleways as well as provision of new public footpaths / bridleways / cycleways extending to the east of the site, providing pedestrians, cyclists and all users with a higher quality route that avoids the A5 corridor.
 - Replacing the existing substandard parking laybys at the A5 with a designated lorry parking facility for up to 150 vehicles, with associated driver facilities.
 - Showers and changing facilities provided to all units.
 - Communal cycle parking, showers and changing facilities at the ancillary Hub Office, available for use by site occupiers and the general public (including staff of neighbouring business parks) to encourage walking and cycling to work.

- 6.7.4. Although not directly related to the ES, the sustainable Framework Travel Plan (FTP) prepared for the proposed development site (as included at **Appendix 6.2 of Volume 3**) should serve to reduce the volume of development traffic generated and therefore slightly decrease any detrimental highways and transport effects caused by traffic flows associated with the proposed development.

Mitigation of Construction Impacts

- 6.7.5. During the active construction phases of the proposed development, a CEMP will be prepared and implemented in order to minimise the risk of potential environmental impacts and to mitigate against the potential impacts associated with construction vehicles.
- 6.7.6. The CEMP will define preferred routes for HGVs and other site traffic to protect local residential areas from the effects of construction traffic movements. The CEMP will also outline the hours of operation of the site, any restrictions on delivery times, it may identify key sources of building materials within the area and will provide details of safe routes to access the local and regional highway network.
- 6.7.7. The requirements of the CEMP will be implemented and monitored in accordance with best practice construction management processes. The main site contractor will operate the site in accordance with the Construction Phase Health and Safety Plan as agreed with the CDM Coordinator, contractor and the HSE. The contents of the Health and Safety Plan will be in accordance with the HSE publication Managing Health and Safety in Construction: Construction (Design and Management) Regulations (2015).

6.8 RESIDUAL EFFECTS

- 6.8.1. Whilst it is detailed above that the proposed development would not have any major detrimental effects, and therefore no mitigation is required in order to address environmental effects, there are traffic related improvement proposals identified within the TA that would have an environmental benefit. Therefore, for completeness each of these improvements is discussed below:

Signal-Controlled Crossings at the Proposed Access on the A5

- 6.8.2. The proposed improvements at the site access will improve safety for pedestrians crossing the road. While it is not possible to quantitatively measure the impact that this would have on severance or pedestrian delay, in qualitative terms it is considered that the overall impact would be a minor benefit.

Delivery of an Internal Shared Footway/Cycleway Link that Extends between the A5 and Birchmoor

- 6.8.3. It is considered that this improvement would contribute to mitigating any minor detrimental traffic effects, without any residual impacts.

Monitoring

- 6.8.4. It is not considered that any specific highways and transportation monitoring should be required for the proposed development, either as a result of the findings presented within the TA or this ES chapter. However, it is noted that the development will have a FTP, which will lead to the development of future detailed site Travel Plans, which will monitor the level of travel demand at the proposed development, and the modes by which such travel is undertaken.

Summary and Conclusions

- 6.8.5. Based on the findings of the ES, it is apparent that the proposed development will have a broadly neutral impact on the environment of the local highway network, with almost no adverse impacts of greater than a minor adverse effect and transport improvement works proposed that would contribute to mitigating any moderate adverse effects.
- 6.8.6. With no major detrimental impacts occurring it can be concluded that no environmental specific mitigation measures are required, and this is summarised in **Table 6-5** below:

Table 6-5 - Summary of Impacts - Highways and Transport

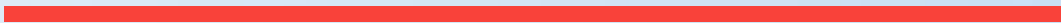
Impact	Geographical Importance	Sensitivity	Magnitude of Impact	Adverse / Beneficial	Significance of Effect
Severance	Local	Low	Negligible	Adverse	Negligible
Driver Delay	Local	Low	Minor	Adverse	Minor
Pedestrian Delay	Local	Low	Negligible	-	Negligible
Fear and Intimidation	Local	Low	-	-	-
Accidents and Safety	Local	Low	Negligible	Adverse	Negligible

6.9 REFERENCES

- IEMA Working Party et al (1993); “Guidelines for the Environmental Assessment of Road Traffic”. Institute of Environmental Assessment;
- Design Manual for Roads and Bridges. Department for Transport; and
- HSE (2015) “Managing Health and Safety in Construction: Construction (Design and Management) Regulations”.

7

NOISE



7 NOISE

7.1 INTRODUCTION

- 7.1.1. This chapter reports the outcome of the assessment of likely significant effects arising from the proposed development upon noise and vibration.
- 7.1.2. This chapter describes the assessment methodology and the baseline conditions relevant to the assessment, as well as a summary of the likely significant effects leading to specific mitigation measures required to avoid, prevent, reduce or, if possible, offset any likely significant adverse effects, and the likely residual effects and any required monitoring after these measures have been employed.
- 7.1.3. This chapter (and its associated figures and appendices) has been completed by WSP and is intended to be read as part of the wider ES.
- 7.1.4. This report is necessarily technical in nature, a glossary of acoustic terminology is presented within **Appendix 7.1**.

7.2 POLICY CONTEXT

- 7.2.1. For a development of this nature, there is no specific all-encompassing legislation relating to the standards associated with noise emission/noise effect. Noise legislation, where it does exist, tends to be either EC-derived and focussed on specific items of noise-emitting plant or on more general nuisance, such as that addressed by the provisions of the *Environmental Protection Act 1990* (**Ref. 7.1**).
- 7.2.2. In lieu of any all-encompassing legislation, assessing the effect of such a development during the site preparation / construction and operational phases must draw on information from a variety of sources. This assessment, therefore, makes reference to a number of legislative documents, British Standards, national planning guidance and local planning policy documents.
- 7.2.3. The key referenced documents are listed below with summaries presented in **Appendix 7.2**.

LEGISLATIVE FRAMEWORK

- 7.2.4. The applicable legislative framework is summarised as follows:
- Environmental Protection Act 1990 (**Ref. 7.1**); and
 - Control of Pollution Act 1974 (CoPA) (**Ref. 7.2**).

POLICY

- 7.2.5. The applicable national planning policy is summarised as follows:
- Noise Policy Statement for England (NPSE) (**Ref. 7.3**); and
 - National Planning Policy Framework (NPPF) (**Ref. 7.4**);
- 7.2.6. The applicable local planning policy is contained in the North Warwickshire Local Plan (2021) (**Ref. 7.5**);

GUIDANCE

- 7.2.7. The following guidance documents have been used during the preparation of this chapter:

- BS 5228-1:2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites. Part 1: Noise (BS 5228-1) (Ref. 7.6)*;
- BS 5228-2:2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites. Part 2: Vibration (BS 5228-2) (Ref. 7.7)*;
- DMRB LA 111, *Noise and Vibration*, Revision 2, 2020 (LA 111) (Ref. 7.8);
- *Calculation of road traffic noise memorandum 1988 (CRTN) (Ref. 7.9)*;
- BS 4142:2014+A1:2019: *Methods for rating and assessing industrial and commercial sound (BS 4142) (Ref. 7.10)*;
- ISO 9613-2:1996: *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation (ISO 9613-2) (Ref. 7.11)*;
- Planning Practice Guidance (PPracG) (Ref. 7.12); and

7.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

7.3.1. **Table 7-1** provides a summary of the consultation activities undertaken in support of the preparation of this assessment.

Table 7-1 - Summary of consultation undertaken

Body/Organisation	Individual / statutory body / organisation	Meeting dates and other forms of consultation	Summary and outcome of discussions
North Warwickshire Borough Council (NWBC)	Pollution Control Department	Phone call 1 October 2020	Initial consultation from WSP discussing: <ul style="list-style-type: none"> ■ The proposed scope of the assessment; ■ Proposed baseline assessment methodology; ■ Any impacts scoped out of the assessment.
		Email 2 October 2020	A formal record of the above, including: <ul style="list-style-type: none"> ■ Satellite image highlighting indicative attended and unattended measurement positions for baseline monitoring; and ■ A request for any comments on the information provided.
		Email 2 October 2020	Response from Pollution Control Officer at NWBC, comprising: <ul style="list-style-type: none"> ■ Request of attended monitoring to supplement unattended at both long term monitoring locations and additional locations in the surrounding area during the daytime and night-time.

Body/Organisation	Individual / statutory body / organisation	Meeting dates and other forms of consultation	Summary and outcome of discussions
		Email 2 October 2020	Response to the requests put forward by NWBC confirming acceptance and that the assessment methodology will be updated accordingly to include attended measurements.
NWBC	Dealing Pollution Control Officer	Email 23 December 2020	Scoping comments received from dealing Pollution Control Officer at NWBC, comprising: <ul style="list-style-type: none"> ■ Requesting confirmation of the study area extent for the assessment; ■ Querying the extent of the survey based on conversations with Chris Higham (referenced above); and ■ Querying the need for further surveying to demonstrate likely future conditions.
		Email 19 January 2021	Response to Matthew from WSP Planning including noise response to scoping comments, comprising: <ul style="list-style-type: none"> ■ Confirmation to the extent of the study area; ■ Evidence that the surveying works undertaken are sufficient to support and outline planning application of this nature; ■ Evidence that the measured data is in line with noise mapping data and previous development noise levels despite the ongoing COVID-19 pandemic; and ■ Justification that no further surveying works are completed in line with government guidance and the evidence listed above.

SCOPE OF THE ASSESSMENT

7.3.2. The scope of this assessment has been established through an ongoing scoping process. Further information can be found in **Chapter 5: Approach to EIA**.

7.3.3. This section provides an update to the scope of the assessment and re-iterates the evidence base for those aspects of the assessment that are scoped- following further iterative assessment.

Elements Scoped In and Out of the Assessment

7.3.4. **Table 7-2** presents the elements that have been scoped in and out of the assessment.

Table 7-2 - Elements scoped in and out of the assessment

Element	Phase	Scoped In	Scoped Out	Justification
Construction Noise	Construction	✓		Proximity of sensitive receptors which may experience temporary increases in noise during construction.
Construction vibration	Construction	✓		Proximity of sensitive receptors which may experience temporary increases in vibration during construction.
Construction generated road traffic noise	Construction		✓	Construction traffic would predominantly use the M42 and A5 access the site. It is anticipated that changes in flows on these routes as a result of construction traffic would be small, and not sufficient to give rise to significant noise level changes.
Development generated commercial operations (including HGV operations and car park usage) and fixed plant noise	Operation	✓		Proximity of sensitive receptors which may experience permanent noise impacts from the Proposed Development.
Development generated vibration	Operation		✓	The industrial / commercial activities associated with the operational Proposed Development are not expected to generate significant vibration levels.
Development generated road traffic noise	Operation	✓		Proximity of sensitive receptors which may experience permanent noise impacts due to the Proposed Development.
Development generated road traffic groundborne vibration	Operation		✓	The mechanism for the generation of groundborne road traffic vibration is typically HDVs travelling over uneven surfaces e.g. potholes. The proposed development would introduce new smooth road surfaces within the site and as such significant effects would not arise.
Development generated noise on proposed industrial /	Operation		✓	Industrial and commercial units in the proposed development are not considered sensitive receptors (with the exception of the Phase 1 hotel), and as such significant effects would not arise.

Element	Phase	Scoped In	Scoped Out	Justification
commercial units				

EXTENT OF THE STUDY AREA

- 7.3.5. Construction noise arising from the proposed development is assessed at selected sensitive receptors within a study area of 300m of the site boundary.
- 7.3.6. Construction vibration arising from the proposed development is assessed at selected sensitive receptors within a study area of 100m of the site boundary.
- 7.3.7. Operational noise from commercial activities and fixed plant is assessed at selected sensitive receptors within a study area of 300m from the site boundary.
- 7.3.8. The construction and operation noise study areas are shown in **Figure 7.1 of Volume 4**.
- 7.3.9. Development generated road traffic noise is assessed for the existing road network. The adopted study area includes all routes in the traffic model developed for the **Transport Assessment** submitted in support of the planning application (a copy of which is contained at **Appendix 6.1 of Volume 3**).

METHOD OF BASELINE DATA COLLATION

Desk Study

- 7.3.10. A desktop review has identified the existing key noise sources in the vicinity of the site and the closest noise sensitive receptors.
- 7.3.11. The following data sets were reviewed:
 - Ordnance Survey 1:50,000 Land Ranger mapping;
 - Ordnance Survey 1:25,000 Explorer mapping;
 - Defra MAGIC online mapping resource including 1:10,000 mapping;
 - Google and ESRI online mapping and aerial photography; and
 - Street-view photography.

Site Visit and Surveys

- 7.3.12. A baseline noise level survey was undertaken at the site, starting on Friday 9 October 2020 and ending on Friday 16 October 2020, the survey ran continuously for seven days. Additional supplementary attended measurements were undertaken during the daytime on Friday 9 October and Friday 16 October; and during the night-time on Tuesday 13 October.
- 7.3.13. The survey was undertaken to establish the prevailing levels and noise environment at locations selected as representative of the closest existing noise-sensitive receptors. Microphones were positioned at 1.5m above ground level, in free-field conditions and fitted with windshields.
- 7.3.14. The equipment used and the measurement locations are presented in **Table 7.3-1** and **Table 7.3-2** of **Appendix 7.3 of Volume 3** and are presented in **Figure 7.1 of Volume 4**.

ASSESSMENT METHODOLOGY

- 7.3.15. The adopted assessment methodologies have been applied to demonstrate compliance with national policy and allow determination of whether significant environmental effects would arise as a result of the proposed development. The adopted assessment methodologies draw upon the British Standards and best practice guidance as applicable to each impact being assessed.

Construction Phase

Construction Noise

- 7.3.16. The assessment of construction noise is based on the guidance contained within BS 5228-1. Construction noise assessment criteria have been determined using the measured and modelled baseline noise levels, following the ABC method as detailed within Annex E Section E3.2 of this Standard (see **Appendix 7.2 of Volume 3**).
- 7.3.17. Construction noise level predictions have been undertaken for a sample of the closest noise sensitive receptors. Prediction have been undertaken for the closest phase of the proposed development in each case. The results have been compared against the assessment criteria. The margin of compliance / exceedance of the assessment criteria has been used to inform whether a significant effect would occur.

Construction Vibration

- 7.3.18. The assessment of construction vibration is based on the guidance contained within BS 5228-2 (see **Appendix 7.2 of Volume 3**).
- 7.3.19. Construction vibration level predictions have been undertaken for a sample of the closest vibration sensitive receptors. The results have been compared against the assessment criteria. The margin of compliance / exceedance of the assessment criteria has been used to inform whether a significant effect would occur.

Operational Phase

Development Generated Road Traffic Noise

- 7.3.20. The assessment of development generated road traffic noise is based upon the guidance in LA 111 (**Ref. 7.8**).
- 7.3.21. Details of the traffic data supporting this assessment are given in **Appendix 7.7 of Volume 3**.
- 7.3.22. The impact of development generated road traffic noise during the operational phase has been undertaken based on the proposed development traffic data.
- 7.3.23. The assessment has considered the following scenarios, for which traffic data has been generated:
- 2026 do-minimum¹ opening year² (DMOY);

¹ The 'do-minimum' means a scenario with the Proposed Development.

² First year of operation.

- 2026 do-something³ opening year (DMFY):
- 2041 do-minimum future year⁴ (DMFY); and
- 2041 do-something future year (DSFY).

7.3.24. Basic Noise Level (BNL) calculations have been undertaken in accordance with CRTN (**Ref. 7.9**) for each local road traffic link, and each of the above scenarios. The change in noise levels arising as a result of the Proposed Development in (Short-term), and in combination with natural traffic growth (Long-term), have then been determined by making the following comparisons:

- Short-term = DSOY - DMOY; and
- Long-term = DSFY - DMOY.

7.3.25. The significance of these noise level changes has then been informed by consideration to whether there are any existing noise sensitive receptors that are close to the assessed routes (i.e. that could be subject to the identified level changes), and by application of the short-term and long-term impact magnitude scales, as presented in **Table 7-5** and

7.3.26. **Table 7-6.**

Operational Site Noise

7.3.27. The operational site noise assessment is detailed in **Appendix 7.6 of Volume 3.**

7.3.28. Operational noise break-out from the proposed development has been assessed for service yard/haulage operations and car park use.

7.3.29. For dwellings, operational site noise has been assessed in accordance with BS 4142 (**Ref. 7.10**).

7.3.30. Drawing upon the results of the background noise survey, daytime and night-time noise assessment criteria have been determined in accordance with this standard.

7.3.31. Operational noise level predictions have been undertaken for two working scenarios. The results of these noise level predications have been assessed by comparison against the derived noise assessment criteria. The assessment results have been used to determine whether a significant effect would arise.

7.3.32. Noise level limits for fixed plant and equipment are specified so that it shall not give rise to a change in the operational noise levels from service yard, haulage and car park activities.

ASSESSMENT MODELLING

Construction Noise

7.3.33. The methodology adopted for the prediction of construction noise levels follows that set out in BS 5228-1 (**Ref. 7.6**). The noise predictions have been made using Microsoft Excel spreadsheets, which have been developed in-house (by WSP) in accordance with BS 5228-1 (**Ref. 7.6**) methodologies.

³ The 'do-something' means a scenario with the Proposed Development.

⁴ Fifteenth year after opening.

- 7.3.34. The BS 5228-1 (**Ref. 7.6**) calculation methods allow noise levels to be determined for various construction activities. However, the accuracy of such predictions is necessarily limited by assumptions that have to be made regarding the number and type of plant used, their location and detailed operating arrangements. Whilst this information would be clarified as the detailed design progresses and when resources are mobilised, other information (such as exactly where the plant operates and for how long) would remain uncertain, even after works have commenced.
- 7.3.35. It has therefore been necessary to perform a generic construction phase noise assessment, focussing on key activities, with the aim of identifying whether significant temporary noise effects are likely to arise at the closest sensitive receptors. The plant types, number and utilisations adopted in the completed noise level predictions are detailed in **Appendix 7.4 of Volume 3**.

Construction Vibration

- 7.3.36. The methodology adopted for the prediction of construction noise levels follows that set out in BS 5228-2. The vibration predictions have been made using Microsoft Excel spreadsheets, which have been developed in-house (by WSP) in accordance with BS 5228-2 (**Ref. 7.7**) methodologies.
- 7.3.37. The vibration predictions have been made using empirical data provided in BS 5228-2 (**Ref. 7.7**). However, the accuracy of such predictions is necessarily limited by assumptions that have to be made regarding the number and type of plant used, their location, detailed operating arrangements, and the ground conditions. Whilst this information would be clarified as the detailed design progresses and when resources are mobilised, other information (such as exactly where the plant operates and for how long) would remain uncertain, even after works have commenced.
- 7.3.38. It has therefore been necessary to perform a generic construction phase vibration assessment, focussing on key activities, with the aim of identifying whether significant temporary vibration effects are likely to arise at the closest sensitive receptors. The plant types, number and utilisations adopted in the completed vibrations level predictions are detailed in **Appendix 7.4 of Volume 3**.

Operational Site Noise

- 7.3.39. To inform the assessment of the operational site noise, a detailed noise model has been prepared for the proposed development. This model has been prepared within the CadnaA[®] noise modelling suite and extends to the nearest noise sensitive receptors.
- 7.3.40. At this stage, information about the nature of operations (e.g. working hours, shift patterns, HGV numbers) and on the requirements for fixed plant and equipment are not known. These would be dependent upon the future occupants of the proposed development. The approach has therefore been to assess example operating scenarios including those associated with ambient and partial chilled goods operations. A number of assumptions on the noise generating operations have been made based on the application drawings and WSP's experience of similar schemes.
- 7.3.41. The approach adopted in the generation of the noise model is set out in **Appendix 7.5 of Volume 3**. This appendix also includes the noise source data and details of the scenarios considered in this assessment.

SIGNIFICANCE CRITERIA

- 7.3.42. The approach to determining significant effects addresses the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) to determine whether any effects would be significant or not. In addition, noise related planning policy also

references the need to consider significance in terms of effect levels as referenced for use in the NPSE (**Ref. 7.3**). To help differentiate these policy ‘effect levels’ from EIA significance effects, they are referred to in this chapter as ‘NPSE classification’.

- 7.3.43. Where it is appropriate to do so, the following subsections also detail how noise impacts are classified against the NPSE (**Ref. 7.3**) effect levels (i.e. NOEL⁵, LOAEL⁶, and SOAEL⁷), such that compliance with national noise policy is also demonstrated.

Construction Noise

Magnitude of Impact and NPSE Classification

- 7.3.44. For construction noise, the magnitude of impact and NPSE classification are determined based noise level and duration.
- 7.3.45. The predicted construction noise level is compared against the construction noise threshold, as determined following the ABC method detailed in BS 5228-1 (**Ref. 7.6**). **Table 7-3** details the resulting impact magnitude and effect level criteria that have been applied.

Table 7-3 - Construction noise criteria

Construction Noise Level (x) vs. Receptor Criteria (ABC method)	Magnitude of Impact	NPSE Classification
x < criteria	Negligible to Minor	NOEL
x > criteria and ≤+5 dB over criteria	Minor to Moderate	LOAEL to SOAEL
x ≥+5 dB over criteria	Moderate to Major	Above SOAEL

- 7.3.46. In **Table 7-3**, where the magnitude of impact or NPSE classification has more than one classification, a single classification is assigned, taking into account duration, national guidance and professional judgement.

Significance of Effect

- 7.3.47. A significant effect occurs where a moderate or major impact occurs for a duration exceeding 10 or more days of working in any 15 consecutive days, or for a total number of days exceeding 40 in any 6 consecutive months.

⁵ NOEL = No Observed Effect Level

⁶ LOAEL = Lowest Observed Adverse Effect Level

⁷ SOAEL = Significant Observed Adverse Effect Level

Construction Vibration

Magnitude of Impact and NPSE Classification

- 7.3.48. For construction vibration, the magnitude of impact and NPSE classification are determined based on vibration level and duration.
- 7.3.49. The predicted construction vibration level is compared against the construction vibration criteria. **Table 7-4** details the resulting impact magnitude and effect level criteria that have been applied.

Table 7-4 - Construction vibration criteria

Construction Vibration (x) in PPV, mm/s	Magnitude of Impact	NPSE Classification
$x < 0.3$	Negligible to Minor	NOEL
$0.3 < x < 1.0$	Minor to Moderate	LOAEL to SOAEL
$1.0 < x$	Moderate to Major	Above SOAEL

- 7.3.50. In **Table 7-4**, where the magnitude of impact or NPSE classification has more than one classification, a single classification is assigned, taking into account duration, national guidance and professional judgement.

Significance of Effect

- 7.3.51. A significant effect occurs where a moderate or major impact occurs for a duration exceeding 10 or more days of working in any 15 consecutive days, or for a total number of days exceeding 40 in any 6 consecutive months.

Development Generated Road Traffic Noise

Magnitude of Impact and NPSE Classification

- 7.3.52. For development generated traffic noise, the criteria have been determined based upon the short-term and long-term classification scales detailed within LA 111 (**Ref. 7.8**). The terminology used within these scales have been updated to reflect that being used in this assessment. The resulting magnitude of impact criteria are detailed in **Table 7-5** and
- 7.3.53. **Table 7-6**.

Table 7-5 - Development generated road traffic noise criteria, Short-term

Noise Change ($L_{A10,18hr}$), dB	Magnitude of Impact
0	No Change
0.1 to 0.9	Negligible
1.0 to 2.9	Minor
3.0 to 4.9	Moderate
≥ 5.0	Major

Table 7-6 - Development generated road traffic noise criteria, Long-term

Noise Change ($L_{A10,18hr}$), dB	Magnitude of Impact
0	No Change
0.1 to 2.9	Negligible
3.0 to 4.9	Minor
5.0 to 9.9	Moderate
≥ 10.0	Major

7.3.54. The NPSE classifications have been determined based on the absolute road traffic noise levels in accordance with the scale presented in **Table 7-7**.

Table 7-7 - Development generated road traffic NPSE classification

Period	Noise Level	NPSE Classification
Day (0700-2300)	<55 dB $L_{A10,18h}$ facade	NOEL
	≥ 55 dB and <68 dB $L_{A10,18h}$ facade	LOAEL
	≥ 68 dB $L_{A10,18h}$ facade	SOAEL
Night (2300-0700)	<40 dB $L_{night, outside free-field}$	NOEL
	≥ 40 dB and <55 dB $L_{night, outside free-field}$	LOAEL
	≥ 55 dB $L_{night, outside free-field}$	SOAEL

Significance of Effect

7.3.55. A significant effect occurs where a moderate or major impact is identified, but also subject to consideration of the following contextual factors:

- Absolute noise level;
- Proximity to sensitive receptors to the road links;
- Differing magnitude in short and long term;
- Whether or not the impact changes the acoustic character; and
- Likely perception of change by residents.

Operational Site Noise

Magnitude of Impact and NPSE Classification

7.3.56. For dwellings, the magnitude of impact and effect level criteria have been determined based upon the guidance contained within BS 4142 (Ref. 7.10) This assessment considers the difference between the sound from the operation of the proposed development (including any correction(s) for noticeable acoustic characteristics) and the prevailing background sound levels, but also taking into account context and the sound levels in absolute terms. **Table 7-8** details the resulting magnitude of impact and effect level criteria that have been applied.

Table 7-8 - Operational site noise criteria for dwellings

Difference between Rating Level ($L_{A,r,Tr}$) and Background Sound Level ($L_{A90,T}$) (x)	Magnitude of Impact ⁽¹⁾	NPSE Classification
$x \leq 0$	No Change	NOEL
$0 < x \leq 3$	Negligible - Minor	LOAEL
$3 < x \leq 8$	Moderate	LOAEL to SOAEL
>8	Major	Above SOAEL

⁽¹⁾ Magnitude of impact can be subject to adjustment to account for context.

Significance of Effect

7.3.57. A significant effect occurs where a moderate or major impact is identified, but also subject to consideration of the following contextual factors:

- Magnitude of change;
- Absolute noise level;
- Whether or not the impact changes the acoustic character; and
- Sensitivity of the receptor.

7.4 BASELINE CONDITIONS

7.4.1. The following sensitive receptors within the study area are those closest to the proposed development and which therefore have the greatest potential to be subject to significant effects. The sensitive receptors are identified on **Figure 7.1**.

- R01 - Birchmoor Village;
- R02 - Dwellings on A5 Watling Street; and

- R03 - Dwellings off Birchmoor Road.

7.4.2. Full survey results are presented in **Appendix 7.3 of Volume 3** and summarised below. The survey results have been used to determine the daytime ambient noise levels for construction noise assessment purposes ($L_{Aeq,T}$), the adopted levels are presented in **Table 7-9**.

Table 7-9 - Summary of ambient noise levels

Receptor	Weekday daytime (07:00-19:00), $L_{Aeq,12hr}$ dB	Saturday daytime (07:00-13:00), $L_{Aeq,6hr}$ dB
Birchmoor Village (MP1)	56	57
Dwellings on A5 (MP2)	65	63
Dwellings off Birchmoor Road (MP4/MP5) ⁽¹⁾	52	53

⁽¹⁾ Only attended surveys were undertaken at this position, therefore, ambient noise levels presented are a prediction based on the acoustic model. The model is calibrated to the measured unattended noise levels at positions 1 and 2; data is presented for the purposes of establishing construction level criteria only.

7.4.3. In addition, the survey results have been used to determine the prevailing daytime and night-time background sound levels for use in the operational noise assessment ($L_{A90,T}$), the adopted levels are presented in **Table 7-10**.

Table 7-10 – Summary of adopted background noise levels

Receptor	Daytime (07:00-23:00), $L_{A90,1hr}$ dB	Night-time (23:00-07:00), $L_{A90,15min}$ dB
Birchmoor Village (MP1)	46	45
Dwellings on A5 (MP2)	56	49
Dwellings off Birchmoor Road (MP4/MP5)	51	41

FUTURE BASELINE

7.4.4. Given that the local noise environment is dominated by road traffic noise, it is anticipated that small increases in the baseline noise conditions may arise as a result of natural traffic growth over time.

7.5 IDENTIFICATION AND VALUATION OF KEY IMPACTS

CONSTRUCTION PHASE

7.5.1. Assessments of potential effects arising as a result of construction noise can be found in **Appendix 7.4 of Volume 3**, with a summary of the results presented in **Table 7-11** below.

Table 7-11 - Assessment of potential effects, additional mitigation, residual effects and monitoring during construction

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
Receptor R01 Birchmoor Village	Potential effects	<p><u>Construction Noise</u></p> <p>This receptor group is unlikely to be subject to construction noise. Predicted construction noise levels do not exceed BS 5228-1 (Ref. 7.6) thresholds during all of the assumed phases and activities.</p> <p>It is recognised that the final noise levels at the R01 receptor group would be dependent upon the final masterplan that is brought forward. Therefore, notwithstanding the margins of compliance that have been identified (between -6 dB and -1 dB), consideration has been given to appropriate mitigation measures.</p> <p><u>Construction Vibration</u></p> <p>This receptor group would be subject to construction vibration. Predicted vibration levels do exceed BS 5228-2 (Ref. 7.7) based on the minimum separation distances between the receptor and the assumed phases and activities as highlighted in Appendix 7.4 of Volume 3.</p> <p>However, activities that show the potential for a moderate impact on this receptor group are for piling. At this stage, the type of piling, quantity of piles, depth of piles and the location of any works is unknown.</p>
	Additional mitigation	<p><u>Construction Noise & Vibration</u></p> <p>Construction works would be undertaken in accordance with the principle of Best Practicable Means (BPM) as defined in Section 72 of the CoPA (Ref. 7.2). Example measures in compliance with BPM are listed within Appendix 7.4 of Volume 3.</p> <p>Mitigation measures would be secured and implemented via a Construction Environmental Management Plan (CEMP). The preparation of the CEMP, and subsequent compliance with it, could be ensured through the use of a planning condition.</p> <p>Piling works should be given consideration once ground conditions and the required locations are finalised. However, based on a worst-case assessment whereby piling is driven to refusal, it is advised that percussive piling is not used. Instead, rotary bored piling or continuous flight auger piling, should be used due to the significant reduction in vibration levels generated through this method.</p>
	Residual effects and monitoring	<p><u>Construction Noise</u></p> <p>With mitigation measures in place, predicted results are likely to yield a sound reduction of up to 5 dB.</p> <p>Therefore, a direct, temporary, local, adverse negligible impact is predicted for the R01 group of receptors. This effect is not significant.</p> <p><u>Construction Vibration</u></p>

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		<p>With consideration to the mitigation measures outlined above, i.e. the use of rotary bored piling rigs a direct, temporary, local, adverse negligible impact is predicted for the R01 group of receptors. This effect is not significant.</p> <p><u>Monitoring</u></p> <p>The requirements for construction phase monitoring would be identified through the delivery of, and compliance with, the proposed CEMP. The appointed Principal Contractor would be responsible for the delivery and verification of BPM.</p>
<p>Receptor R02 Dwellings on A5</p>	<p>Potential effects</p>	<p><u>Construction Noise</u></p> <p>This receptor group is unlikely to be subject to construction noise. Predicted construction noise levels do not exceed BS 5228-1 (Ref. 7.6) thresholds during all of the assumed phases and activities.</p> <p>It is recognised that the final noise levels at the R02 receptor group would be dependent upon the final masterplan that is brought forward. Therefore, notwithstanding the margins of compliance that have been identified (between -28 dB and -23 dB), consideration has been given to appropriate mitigation measures.</p> <p><u>Construction Vibration</u></p> <p>This receptor group is approximately 350m away from the site boundary, as significant impacts are not expected beyond 120m this receptor group has not been considered within the construction vibration assessment.</p>
	<p>Additional mitigation</p>	<p><u>Construction Noise</u></p> <p>Construction works would be undertaken in accordance with the principle of Best Practicable Means (BPM) as defined in Section 72 of the CoPA (Ref. 7.2). Example measures in compliance with BPM are listed within Appendix 7.4 of Volume 3.</p> <p>Mitigation measures would be secured and implemented via a CEMP. The preparation of the CEMP, and subsequent compliance with it, could be ensured through the use of a planning condition.</p>
	<p>Residual effects and monitoring</p>	<p><u>Construction Noise</u></p> <p>With mitigation measures in place, predicted results are likely to yield a sound reduction of up to 5 dB.</p> <p>A direct, temporary, local, adverse negligible impact is predicted for the R02 group of receptors. This effect is not significant.</p>
<p>Receptor R03 Dwellings off Birchmoor Road</p>	<p>Potential effects</p>	<p><u>Construction Noise</u></p> <p>This receptor group is likely to be subject to construction noise. Predicted construction noise levels do exceed BS 5228-1 (Ref. 7.6) thresholds during some of the assumed phases and activities.</p> <p>It is recognised that the final noise levels at the R03 receptor group would be dependent upon the final masterplan that is brought forward. Therefore, notwithstanding the margins of compliance that</p>

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		<p>have been identified (between -4 dB and +1 dB), consideration has been given to appropriate mitigation measures.</p> <p>However, activities that potentially give rise to the noise thresholds for this receptor group are excavation works. Until a formal construction phasing plan is known it is not possible to determine the duration and location of such works.</p> <p><u>Construction Vibration</u></p> <p>As per the scoping report, this receptor group is approximately 290m away from the site boundary and is therefore not considered within the construction vibration assessment.</p>
	<p>Additional mitigation</p>	<p><u>Construction Noise</u></p> <p>Construction works would be undertaken in accordance with the principle of Best Practicable Means (BPM) as defined in Section 72 of the CoPA (Ref. 7.2). Example measures in compliance with BPM are listed within Appendix 7.4.</p> <p>Specific mitigation measures to reduce noise from excavation may include localised screening or perimeter fencing.</p> <p>Mitigation measures would be secured and implemented via a CEMP. The preparation of the CEMP, and subsequent compliance with it, could be ensured through the use of a planning condition.</p>
	<p>Residual effects and monitoring</p>	<p><u>Construction Noise</u></p> <p>With mitigation measures in place, predicted results are likely to yield a sound reduction of up to 5 dB.</p> <p>Therefore, a direct, temporary, local, adverse minor impact is predicted for the R03 group of receptors. This effect is not significant.</p>

OPERATIONAL PHASE

- 7.5.2. Assessments of potential effects arising as a result of operational noise can be found in **Appendix 7.6 of Volume 3** (Industrial/Commercial Noise Assessment) and **Appendix 7.7 of Volume 3** (Development Generated Traffic Noise Assessment), with a summary of the results presented in **Table 7-12** below.
- 7.5.3. Two operational scenarios have been considered:
1. ambient goods operation; and
 2. partial chilled goods operation.
- 7.5.4. The operational assessment model includes indicative topographical changes to the site associated with the proposed development. If the topographical proposals are altered or not implemented in this way, then further assessment will be required as noise levels will likely be increased to that presented herein; such mitigation is included to demonstrate principle.

7.5.5. Noise contours for scenario 1 and scenario 2 are presented respectively in **Figure 7.2** and **Figure 7.3 of Volume 4**.

Table 7-12 - Assessment of potential effects, additional mitigation, residual effects and monitoring during operation

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
<p>Receptor R01 Birchmoor Village</p>	<p>Potential effects</p>	<p><u>Industrial / Commercial Noise from the Development</u></p> <p>This receptor group is likely to be subject to operational noise. Noise levels have been assessed in line with BS 4142 (Ref. 7.10), however, it is recognised that the final noise levels at the R01 receptor group would be dependent upon the final masterplan that is brought forward. Therefore, notwithstanding the above the following excess over rating levels have been identified:</p> <ul style="list-style-type: none"> ■ Scenario 1: -6.8dB and -3.9dB for daytime and night-time respectively; and ■ Scenario 2: -2.0dB and +0.6dB for daytime and night-time respectively. <p><u>Fixed plant and equipment</u></p> <p>Noise limits have been determined for noise from any future fixed/mechanical plant.</p> <p><u>Development generated traffic noise</u></p> <p>The receptor group is not impacted by development generated traffic on the existing network.</p>
<p>Additional mitigation</p>	<p><u>Industrial / Commercial Noise from the Development</u></p> <p>Additional mitigation measures would be dependent upon the nature and intensity of future operations, as well as the finalised layout and design.</p> <p>Delivery of mitigation could be secured through the use of a planning condition.</p> <p>The requirement for and the details of any mitigation measures is dependent on a final design and future occupant requiring chilled goods operations, which is not presently available at out outline planning stage. As the assessment presents a < 1dB increase in background sound levels, mitigation measures are not considered warranted at this stage. Once a detailed masterplan is put forward as part of the planning process, further investigation into the type of, quantities and internal haulage routes for HGVs will be required and mitigation measures should be presented at this stage.</p> <p><u>Fixed plant and equipment</u></p> <p>Compliance with the noise limits could be delivered through the use of a planning condition.</p> <p><u>Development Generated Traffic Noise</u></p> <p>None required.</p>	

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
	Residual effects and monitoring	<p><u>Industrial / Commercial Noise from the Development</u></p> <p>A conservative background sound level has been chosen for this receptor, which is lower than the arithmetic and logarithmic averages, therefore, the assessment is considered to be robust.</p> <p>For both daytime and night-time for scenario 1 a direct, permanent, local, adverse impact of no change is predicted for the R01 group of receptors. This effect is not significant.</p> <p>For daytime for scenario 2, a direct, permanent, local, adverse impact of no change is predicted for R01 group of receptors. The effect is not significant.</p> <p>For night-time for scenario 2, a direct, permanent, local, adverse impact of negligible is predicted for R01 group of receptors. The effect is not significant.</p> <p>At this stage, there are no requirements for monitoring at this receptor.</p>
Receptor R02 Dwellings on A5	Potential effects	<p><u>Industrial / Commercial Noise from the Development</u></p> <p>This receptor group is unlikely to be subject to operational noise.</p> <p>Noise levels have been assessed in line with BS 4142 (Ref. 7.10), however, it is recognised that the final noise levels at the R01 receptor group would be dependent upon the final masterplan that is brought forward. Therefore, notwithstanding the above the following excess over rating levels have been identified:</p> <ul style="list-style-type: none"> ■ Scenario 1: -13.2dB and -4.6 for daytime and night-time respectively; and ■ Scenario 2: -8.7dB and -0.3dB for daytime and night-time respectively. <p><u>Fixed plant and equipment</u></p> <p>Noise limits have been determined for noise from any future fixed/mechanical plant.</p> <p><u>Development generated traffic noise</u></p> <p>The receptor group is not impacted by development generated traffic on the existing network.</p>
	Additional mitigation	<p><u>Industrial / Commercial Noise from the Development</u></p> <p>Additional mitigation measures would be dependent upon the nature and intensity of future operations, as well as the finalised layout and design.</p> <p>Delivery of mitigation could be secured through the use of a planning condition.</p> <p>However, as no change is expected under current proposals, mitigation is not considered warranted at this stage.</p> <p><u>Fixed plant and equipment</u></p> <p>Compliance with the noise limits could be delivered through the use of a planning condition.</p>

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		<p><u>Development Generated Traffic Noise</u></p> <p>None required.</p>
	<p>Residual effects and monitoring</p>	<p><u>Industrial / Commercial Noise from the Development</u></p> <p>For both daytime and night-time for scenario 1 and scenario 2 a direct, permanent, local, adverse impact of no change is predicted for the R02 group of receptors. This effect is not significant.</p> <p>At this stage, there are no requirements for monitoring at this receptor.</p>
<p>Receptor R03 Dwellings off Birchmoor Road</p>	<p>Potential effects</p>	<p><u>Industrial / Commercial Noise from the Development</u></p> <p>This receptor group is likely to be subject to operational noise. Noise levels have been assessed in line with BS 4142 (Ref. 7.10), however, it is recognised that the final noise levels at the R01 receptor group would be dependent upon the final masterplan that is brought forward. Therefore, notwithstanding the above the following excess over rating levels have been identified:</p> <ul style="list-style-type: none"> ■ Scenario 1: -14.5dB and -3.2dB for daytime and night-time respectively; and ■ Scenario 2: -9.8dB and +1.3dB for daytime and night-time respectively. <p><u>Fixed plant and equipment</u></p> <p>Noise limits have been determined for noise from any future fixed/mechanical plant.</p> <p><u>Development generated traffic noise</u></p> <p>The receptor group is not impacted by development generated traffic on the existing network.</p>
	<p>Additional mitigation</p>	<p><u>Industrial / Commercial Noise from the Development</u></p> <p>Additional mitigation measures would be dependent upon the nature and intensity of future operations, as well as the finalised layout and design.</p> <p>Delivery of mitigation could be secured through the use of a planning condition.</p> <p>The requirement for and the details of any mitigation measures is dependent on a final design and future occupant requiring chilled goods operations, which is not presently available at out outline planning stage. As the assessment presents a < 2dB increase in background sound levels, mitigation measures are not considered warranted at this stage. Once a detailed masterplan is put forward as part of the planning process, further investigation into the type of, quantities and internal haulage routes for HGVs will be required and mitigation measures should be presented at this stage.</p> <p><u>Fixed plant and equipment</u></p> <p>Compliance with the noise limits could be delivered through the use of a planning condition.</p>

Sensitive Receptor	Potential Effects/Additional Mitigation/Residual Effects and Monitoring	
		<p><u>Development Generated Traffic Noise</u> None required.</p>
	<p>Residual effects and monitoring</p>	<p><u>Industrial / Commercial Noise from the Development</u> For both daytime and night-time for scenario 1 a direct, permanent, local, adverse impact of no change is predicted for the R03 group of receptors. This effect is not significant.</p> <p>For daytime for scenario 2, a direct, permanent, local, adverse impact of no change is predicted for R03 group of receptors. The effect is not significant.</p> <p>For night-time for scenario 2, a direct, permanent, local, adverse impact of negligible is predicted for R03 group of receptors. The effect is not significant.</p> <p>At this stage, there are no requirements for monitoring at this receptor.</p>
<p>Receptors adjacent to the wider road network</p>	<p>Potential effects</p>	<p><u>Industrial / Commercial Noise from the Development</u> Not applicable.</p> <p><u>Fixed plant and equipment</u> Not applicable.</p> <p><u>Development Generated Traffic Noise</u> The receptor group is not impacted by development generated traffic on the existing network.</p>
	<p>Additional mitigation</p>	<p><u>Industrial / Commercial Noise from the Development</u> Not applicable.</p> <p><u>Fixed plant and equipment</u> Not applicable.</p> <p><u>Development Generated Traffic Noise</u> None required.</p>
	<p>Residual effects and monitoring</p>	<p><u>Industrial / Commercial Noise from the Development</u> Not applicable.</p> <p><u>Fixed plant and equipment</u> Not applicable.</p> <p><u>Development Generated Traffic Noise</u> The magnitude of impact is negligible. Therefore, there is likely to be an indirect, permanent, long-term adverse residual effect (not significant).</p> <p>There are no requirements for monitoring at these receptors.</p>

ASSESSMENT AGAINST FUTURE BASELINE

- 7.5.10. The completed assessment work has been undertaken against the existing baseline noise environment, which represents a worst case, as these are lower (and therefore more stringent) than can reasonably be expected to arise in the future.

7.6 OPPORTUNITIES FOR ENVIRONMENTAL ENHANCEMENT

- 7.6.1. The following enhancement opportunities have been identified:

- Maximise the distance between noise sources and sensitive receptors; and
- Using building layout to screen noise sources (e.g. service yards, fixed plant and equipment) from sensitive receptors at the detailed design stage.

7.7 DIFFICULTIES AND UNCERTAINTIES

- 7.7.1. As is typical at planning application stage, the precise details of the noise generating sources during construction and operation are not confirmed. Therefore, a number of assumptions have been made focussing on key activities and drawing upon WSP's experience of similar schemes, with the aim of identifying whether significant noise effects are likely to arise at the closest sensitive receptors. Additional calculations may be required at a later stage. However, the completed calculations are considered appropriate to provide an appreciation of any potentially significant effects.
- 7.7.2. For the construction phase, the type and number of construction plant items, programme and working methodologies to be applied are not known and would be dependent upon the appointed Principal Contractor. The construction noise level predictions have therefore been undertaken based on assumed plant detail drawing upon WSP's experience of similar schemes. Given the marginal exceedance above the threshold criteria, circa 1 dB without mitigation measures applied, it is likely that once the detailed construction assessment is undertaken and exact phasing and plant allocation has been provided that the criteria will be exceeded. Therefore, the noise levels are not considered onerous.
- 7.7.3. Additionally, the construction vibration level predictions have been undertaken based on assumed worst case plant detail drawing up WSP's experience of similar schemes and include high levels of certainty and assume plant that generates high levels of vibration. Final levels will be dependent upon the appointed Principal Contractor and chosen constructions methods.
- 7.7.4. At this stage, information about the nature of operations (e.g. working hours, shift patterns, HGV numbers) and on the requirements for fixed plant and equipment are not known. These would be dependent upon the future occupants of the proposed development. The approach has therefore been to assess example operating scenarios including those associated with ambient and partial chilled goods operations.
- 7.7.5. As no significant effects are currently identified, mitigation measures are not considered warranted for the reasons outlined above. Additionally, a robust design capacity of 25% has been assumed for both daytime and night-time periods; should a lower intensity of use be exercised at night-time then noise levels could be reduced from those presented in this assessment and the need for mitigation unwarranted.
- 7.7.6. Once a detailed masterplan(s) is put forward in subsequent reserved matters applications, then such matters may be investigated further.



SUMMARY

- 7.7.7. A summary of the assessment highlighting potential effects, suggested mitigation, residual effects and monitoring requirements is presented in **Table 7-13**.

Table 7-13 – Summary of Noise and Vibration Effects

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
Construction Phase				
Receptor R01 Birchmoor Village	Noise as a result of on-site operations during the construction programme. Vibration as a result of on-site operations during the construction programme.	Compliance with BPM ensured through use of a CEMP.	Not significant T / D / L / MT	Verification that BPM measures are in place, secured through the use of a CEMP. The appointed Principal Contractor is responsible for delivery and verification of BPM.
Receptor R02 Dwellings on A5	Noise as a result of on-site operations during the construction programme. Vibration as a result of on-site operations during the construction programme.	Compliance with BPM ensured through use of a CEMP.	Not significant T / D / L / MT	Verification that BPM measures are in place, secured through the use of a CEMP. The appointed Principal Contractor is responsible for delivery and verification of BPM.
Receptor R03 Dwellings off Birchmoor Road	Noise as a result of on-site operations during the construction programme. Vibration as a result of on-site operations during the construction programme.	Compliance with BPM ensured through use of a CEMP. Revised groundborne vibration assessment once requirement for piling and excavation works is known. Provision of notice to receptor of when works will be undertaken.	Not significant T / D / L / MT	Verification that BPM measures are in place, secured through the use of a CEMP. The appointed Principal Contractor is responsible for delivery and verification of BPM. Construction noise and vibration monitoring may be required once the detailed design is finalised.
Operational Phase				
Receptor R01 Birchmoor Village	Industrial / commercial noise as a result of on-site operations.	Additional mitigation measures would be dependent upon the nature and intensity of future operations, as well as the finalised layout and design. Planning conditions specifying fixed/mechanical noise level limits.	Not significant P / D / L / LT	To be considered once detailed design is finalised.
Receptor R02 Dwellings on A5	Industrial / commercial noise as a result of on-site operations.	No mitigation required to comply with background sound levels from noise emanating from HGV usage. Planning conditions specifying fixed/mechanical noise level limits.	Not significant P / D / L / LT	To be considered once detailed design is finalised.
Receptor R03 Dwellings off Birchmoor Road	Industrial / commercial noise as a result of on-site operations.	Additional mitigation measures would be dependent upon the nature and intensity of future operations, as well as the finalised layout and design. Planning conditions specifying fixed/mechanical noise level limits.	Not significant P / D / L / LT	To be considered once detailed design is finalised.
Receptors adjacent to the wider road network	Increased noise from road traffic sources on the existing road network	None required	Not significant P / I / L / LT	None required.

Key

P / T = Permanent or Temporary

D / I = Direct or Indirect

ST / MT / LT = Short, Medium or Long Term

N/A = Not Applicable

L = Local

7.8 REFERENCES

- Ref. 7.1 – Environmental Protection Act 1990 (EPA)
- Ref. 7.2 – Control of Pollution Act 1974 (CoPA)
- Ref. 7.3 – Noise Policy Statement for England 2010 (NPSE)
- Ref. 7.4 – National Planning Policy Framework 2021 (NPPF)
- Ref. 7.5 – North Warwickshire Local Plan 2021
- Ref. 7.6 – BS 5228-1:2009+A1:2014, Code of Practice for Noise and Vibration Control on Construction and Open Sites, Part 1: Noise (BS 5228-1)
- Ref. 7.7 – BS 5228-2:2009+A1:2014, Code of Practice for Noise and Vibration Control on Construction and Open Sites, Part 2: Vibration (BS 5228-2)
- Ref. 7.8 – Design Manual for Roads and Bridges. LA 111, Noise and Vibration 2020 (LA 111)
- Ref. 7.9 – Calculation of Road Traffic Noise Memorandum 1988 (CRTN).
- Ref. 7.10 – BS 4142:2014+A1:2019, Methods for Rating and Assessing Industrial and Commercial Sound (BS 4142)
- Ref. 7.11 – ISO 9613-2:1996: Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation (ISO 9613-2)
- Ref. 7.12 – Planning Practice Guidance – Noise (PPracG)

8

AIR QUALITY



8 AIR QUALITY

8.1 INTRODUCTION

- 8.1.1. This chapter describes the air quality impact assessment completed for the proposed development, the outcomes of which are used to determine the likely significant effects on local air quality. The chapter describes the relevant consultation with key consultees during the EIA process, the assessment scope and methodology and a summary of baseline conditions in the locality of the proposed development.
- 8.1.2. The chapter also identifies, where appropriate, mitigation to prevent, minimise or control likely adverse air quality effects arising from the construction and operation phases of the proposed development and the subsequent residual effects.
- 8.1.3. This chapter is intended to be read together with the associated appendices (**Appendices 8.1 to 8.5 of Volume 3**) and the introductory chapters of the ES (**Chapters 1-5**). A glossary of terms and acronyms contained within this chapter is presented in **Appendix 8.1: Glossary of Terms (Volume 3)**.

8.2 POLICY CONTEXT

- 8.2.1. A summary of the legislative framework relevant to the Proposed Development can be found below. A detailed review is presented in **Appendix 8.2: Legislation, Policy, and Guidance (Volume 3)**.

LEGISLATIVE FRAMEWORK

EU Directive 2008/50/EC of the European Parliament on Ambient Air Quality 2008⁸

- 8.2.2. Action to manage and improve air quality is largely driven by European (EU) legislation. The EU Directive on Ambient Air Quality⁸ (2008/50/EC) sets legally binding limits and target values for concentrations of major air pollutants that impact public health such as PM₁₀ and NO₂.

The Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland, 2007⁹

- 8.2.3. Local authorities are responsible for reviewing the state of air quality in their jurisdiction. The Air Quality Strategy (AQS)⁹ sets out standards and objectives for a number of air quality pollutants and allows councils to review air quality in their area against these (see **Table 8-1: Relevant Air Quality Strategy Objectives**). A number of policy options are contained within the AQS⁹ which are intended to provide important benefits to quality of life and help to protect public health and the environment.

⁸ European Parliament, Council of the European Union, (2008). *Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe*. [online] Available at: <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32008L0050>

⁹ Department for Environment, Food and Rural Affairs (DEFRA), (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Volumes 1 and 2* [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf

Table 8-1 - Relevant Air Quality Strategy Objectives

Pollutant	Concentration (µg/m ³)	Measured As	Number of Exceedances Allowed in a Calendar Year
National Air Quality Objectives for the protection of human health			
Nitrogen dioxide (NO ₂)	40	Annual mean	None
	200	1-hour (hourly mean)	No more than 18
Particulates less than 10 micrometres in diameter (PM ₁₀)	40	Annual mean	None
	50	24-hour (daily mean)	No more than 35
Particulates less than 2.5 micrometres in diameter (PM _{2.5})	25	Annual mean	None
National Air Quality Objectives set for the Protection of Vegetation and Ecosystems			
Nitrogen oxides (NO _x)	30	Annual mean	None

8.2.4. After the departure of the UK from the EU, the Environment Bill¹⁰ will introduce a duty to set a legally binding target for fine particulate matter (PM_{2.5}), in addition to at least one further long-term air quality target by October 2022. The European Union (Withdrawal) Act¹¹ ensures that the whole body of existing EU environmental law continues to have effect in UK law.

The Environment Act, 1995.

8.2.5. Under Part IV of the Environment Act¹², local authorities must review and document local air quality within their area by way of staged appraisals and respond accordingly, with the aim of meeting the AQS⁹ objectives defined in the Air Quality Regulations^{13,14,15}.

Air Quality (England) Regulations, 2000 - 2016

8.2.6. Many of the objectives in the AQS⁹ have been made statutory in England with the Air Quality (England) Regulations 2000¹³ and the Air Quality (England) (Amendment) Regulations 2002¹⁴ for Local Air

10 Environment Bill 2020 2019-21 (as amended in Committee) 27 November 2020.
<https://publications.parliament.uk/pa/bills/cbill/58-01/0009/20009.pdf>. Accessed April 2021.

11 European Union (Withdrawal) Act (2018).
<https://www.legislation.gov.uk/ukpga/2018/16/contents/enacted>. Accessed April 2021.

12 UK Public General Acts (1995) *Environment Act Part IV – Air Quality* [online] Available at:
<https://www.legislation.gov.uk/ukpga/1995/25/part/IV>

13 UK Statutory Instruments (2000) *The Air Quality (England) Regulations 2000 SI 2000 / 928* [online] Available at:
<https://www.legislation.gov.uk/uksi/2000/928/contents/made>

14 UK Statutory Instruments (2002) *The Air Quality (England) (Amendment) Regulations 2002 SI 2002 / 3043* [online] Available at:
<https://www.legislation.gov.uk/uksi/2002/3043/contents/made>

15 UK Statutory Instruments (2010) *The Air Quality Standards Regulations 2010 SI 2010 / 1001* [online] Available at:
<https://www.legislation.gov.uk/uksi/2010/1001/contents/made>

Quality Management (LAQM). These regulations require that likely exceedances of the AQS⁹ objectives are assessed in relation to:

‘...the quality of air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present...’

- 8.2.7. The Air Quality Standards Regulations 2010¹⁵ (with minor amendments made in 2016¹⁶) transpose the EU Directive on Ambient Air Quality (2008/50/EC)⁸ into law in England. The directive sets legally binding limit values for concentrations in outdoor air of major air pollutants that impact public health such as PM₁₀, PM_{2.5} and NO₂.

The Environmental Protection Act, 1990

- 8.2.8. Air pollution can constitute a 'statutory nuisance', as set out in the Environmental Protection Act 1990¹⁷, where fumes, dust or deposits are *“prejudicial to health or a nuisance”* (Part III Statutory Nuisances and Clean Air, Section 79). The Act¹⁷ places a duty on local authorities to detect any such nuisances within their area.

NATIONAL AND LOCAL PLANNING POLICY

- 8.2.9. The following national and local planning policy has informed this chapter:

National Planning Policy Framework (NPPF), 2021

- 8.2.10. The Government’s overall planning policies for England are described in the National Planning Policy Framework (NPPF)¹⁸. The core underpinning principle of the NPPF¹⁸ is the presumption in favour of sustainable development, defined as:

‘...meeting the needs of the present without compromising the ability of future generations to meet their own needs’

- 8.2.11. References to air quality in the NPPF¹⁸ include:

- Paragraph 55 *‘...Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations.*
- Paragraph 105 *‘...Significant development should be focused on locations which are or can be made sustainable’;*
- Paragraph 174 *‘...Planning policies and decisions should contribute to and enhance the natural and local environment’;*
- Paragraph 185 *‘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’;*

¹⁶ UK Statutory Instruments (2016) *The Air Quality Standards (Amendment) Regulations 2016 SI 2016 / 1184* [online] Available at: <https://www.legislation.gov.uk/ukSI/2016/1184/contents/made>

¹⁷ UK Public General Acts (1990) *Environmental Protection Act 1990, Statutory Nuisances Section 79* [online] Available at: <https://www.legislation.gov.uk/ukpga/1990/43/section/79/2005-12-21>

¹⁸ Ministry of Housing, Communities and Local Government (2019) *National Planning Policy Framework* [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779764/NPPF_Feb_2019_web.pdf

- Paragraph 186 *‘Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants’;*
- Paragraph 188 *‘...The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land.*

National Planning Practice Guidance – Air Quality

8.2.12. This guidance¹⁹ provides principles on how the planning process can consider the impact of new development on air quality and explains how much detail air quality assessments need to include for proposals, and how impacts on air quality can be mitigated. The practice guidance provides information on how air quality is considered by local authorities in both the wider planning context of Local Plans and neighbourhood planning, and in individual cases where air quality is a consideration in a planning decision.

Clean Air Strategy, 2019

8.2.13. The UK Department for Environment, Food and Rural Affairs (DEFRA) published the UK Clean Air Strategy²⁰ in January 2019. This strategy seeks to achieve the following stated goals:

- Protect the nation’s health;
- Protect the environment;
- Secure clean growth and innovation;
- Reduce emissions from transport, homes, farming and industry; and
- Monitor progress.

NWBC Local Plan²¹, 2021,

8.2.14. The North Warwickshire Local Plan was adopted on 29 September 2021. Air quality is considered under policy LP29, criterion 9, which states that:

Development should meet the needs of residents and businesses without compromising the ability of future generations to enjoy the same quality of life that the present generation aspires to. Development should:

9) avoid and address unacceptable impacts upon neighbouring amenities through overlooking, overshadowing, noise, light, air quality or other pollution;

8.2.15. In addition, the Local Plan has a pertinent policy on parking in which there is a subsection relating to promoting electric charging points within developments:

LP34 - Parking, Electric Vehicle Charging Points

Electric charging points will be provided as part of all relevant developments to an agreed specification and location dependent on the scheme proposed and applicable technical guidance.

¹⁹ Ministry of Housing, Communities and Local Government (2014) *National Planning Practice Guidance – Air Quality* [online] Available at: <https://www.gov.uk/guidance/air-quality--3>

²⁰ DEFRA (2019) *Clean Air Strategy* [online] Available at: <https://www.gov.uk/government/publications/clean-air-strategy-2019>

²¹ North Warwickshire Borough Council (2021) *Adopted Local Plan (September 2021)* [online] Available at: https://www.northwarks.gov.uk/downloads/file/8839/local_plan_adopted_september_2021

Rapid charging points will be provided on sites when located in the public realm. On housing sites homes with on-site parking will provide an electric charging point in an accessible location close to the parking space(s). On commercial sites there will be employee and visitor rapid charging points.

TECHNICAL GUIDANCE

- 8.2.16. A summary of the publications referred to in completing the assessment contained in this chapter is provided below:

Local Air Quality Management Review and Assessment Technical Guidance

- 8.2.17. DEFRA has published technical guidance²² for use by local authorities in their review and assessment work. This guidance, referred to in this document as LAQM.TG16²², will be used where appropriate in the assessment.

Guidance on the Assessment of Dust from Demolition and Construction

- 8.2.18. This document published by the IAQM²³ has been produced to provide guidance to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM₁₀ impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified.

Land-use Planning & Development Control: Planning for Air Quality

- 8.2.19. Environmental Protection UK (EPUK) and the IAQM have published a joint guidance document²⁴ that offers comprehensive advice on: when an air quality assessment may be required; what should be included in an assessment; how to determine the significance of any air quality impacts associated with a development; and, the possible mitigation measures that may be implemented to minimise these impacts.

NWBC Air Quality & Planning Supplementary Planning Document

- 8.2.20. Supplementary Planning Documents (SPDs) expand upon, and support, policies contained within Local Plans and Core Strategies.
- 8.2.21. In September 2019, North Warwickshire Borough Council (NWBC) released their SPD²⁵ on air quality and planning. Air quality is a material consideration that planners are required to take into account when making their plans and when taking planning decisions.

²² DEFRA (2016) *Part IV The Environment Act 1995 and Environment (Northern Ireland) Order 2002 Part III, Local Air Quality Management Technical Guidance LAQM.TG16* Updated in 2018 [online] Available at: <https://iaqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf>

²³ Institute of Air Quality Management (IAQM) (2016) *Guidance on the assessment of dust from demolition and construction* [online] Available at: <https://iaqm.co.uk/text/guidance/construction-dust-2014.pdf> version 1.1

²⁴ Environmental Protection UK (EPUK) and the IAQM (2017) *Land-Use Planning & Development Control: Planning for Air Quality* [online] Available at: <https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

²⁵ North Warwickshire Borough Council (2019) *Air Quality & Planning Guidance* [online] Available at: https://www.northwarks.gov.uk/download/downloads/id/8247/air_quality_sdp_september_2019_adopted.pdf

- 8.2.22. The NWBC Air Quality & Planning SPD²⁵ aims to simplify the consideration of air quality impacts associated with development schemes and focus on incorporation of mitigation at design stage, countering the cumulative impacts of aggregated developments, providing clarity to developers and defining sustainability in air quality terms.

IAQM – A guide to the assessment of air quality impacts on designated nature conservation sites

- 8.2.23. This document²⁶ has been produced by the Institute of Air Quality Management (IAQM) to assist its members in the assessment of the air quality impacts of development on designated nature conservation sites.
- 8.2.24. This IAQM guidance is applicable to the assessment of European, national and local designated sites where such assessments are required by the decision maker.
- 8.2.25. This IAQM guidance document is not intended to be a primer on how to model air quality impacts but instead is intended to provide practical guidance for those air quality specialists who undertake air quality impact assessments and are already familiar with modelling techniques.

The Design Manual for Roads and Bridges, LA 105 Air Quality

- 8.2.26. Updated by National Highways (formerly Highways England) in November 2019, the Design Manual for Roads and Bridges (DMRB) document LA 105 Air Quality²⁷ “provides a framework for assessing, mitigating and reporting the effects of motorway and all-purpose trunk road projects on air quality.” The guidance applies to schemes on the Strategic Road Network (SRN) and, as such, has not been used as the principal guidance document for this assessment, but is referred to where relevant.

8.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

STUDY AREA

- 8.3.1. The air quality study area considered in this chapter is based around the confines of the proposed development site boundary, as shown in **Figure 8-1 of Volume 4: Site Location Plan**. Further expansion of the study area has been completed, in consideration of each phase of development and associated assessment technical guidance documents.

Construction Phase

Fugitive Dust and Particulate Matter (PM₁₀) Emissions

- 8.3.2. The study area relating to the assessment of fugitive dust and particulate matter (PM₁₀) emission during the construction phase has been defined using professional guidance provided by the IAQM²³.
- 8.3.3. The IAQM construction dust guidance²³ document presents a specification that the study area in which an assessment should be carried out for is outlined below:

26 IAQM – A guide to the assessment of air quality impacts on designated nature conservation sites, Version 1.1 May 2020

27 Highways England, Transport Scotland, Welsh Government and the Department for Infrastructure Northern Ireland, (2020). DMRB, LA 105 revision 0. Air Quality [online] Available at: <https://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section3/LA%20105%20Air%20quality-web.pdf>

- Human receptors within 350m of any boundary of construction works and within 50m of routes used by construction vehicles, up to 500m from the proposed development site entrance(s); and,
- Ecological receptors within 50m of any boundary of construction works and within 50m of routes used by construction vehicles, up to 500m from the proposed development site entrance(s).

Operational Phase

Road Vehicle Exhaust Emissions

- 8.3.4. The study area relating to the assessment of operational phase road vehicle exhaust emission has been defined using guidance provided jointly by EPUK and the IAQM²⁴.
- 8.3.5. The following criteria will be used to specify an affected road link network, which will concentrate the study area within proportion:
- A change of Light-Duty Vehicle (LDV) flows of more than 500 Annual Average Daily Traffic (AADT); and/or;
 - A change of Heavy-Duty Vehicles (HDV) flows of more than 100 AADT.
- 8.3.6. The study area will encompass sensitive receptors at conservative locations considered to represent relevant public exposure to changes in vehicle exhaust emissions adjacent to the affected road network, as identified from the criteria outlined above. Due consideration has given to those receptor locations that are situated within 10m of a particular affected road link.
- 8.3.7. Conservative locations, such as nearby a road or junction that experiences a high volume of slow-moving traffic, are chosen to ensure robust assessment, as these receptors are expected to experience higher levels of pollutant concentrations. Receptors are identified within 10m of affected road links as these represent locations at which concentrations from adjacent road sources of emissions will be at their highest.
- 8.3.8. The study area encompasses NWBC and borders Tamworth Borough Council (Tamworth BC).

SUMMARY OF CONSULTATION

- 8.3.9. **Table 8-2: Summary of Consultation** provides an overview of the consultation activities completed in support of the preparation of this chapter.

Table 8-2 - Summary of Consultation

Organisation	Contact	Date and Form of Consultation	Summary
NWBC	Pollution Control Officer, Environmental Health Department	28 th October 2020, email correspondence	Agreement of draft 2020 Annual Status Report (ASR) to be included within EIA Scoping Report; confirmation that project specific monitoring is not required for Proposed Development
NWBC	Pollution Control Officer, Environmental Health Department	17 th November 2020, email correspondence	Provided details of intended ES assessment methodology (replicant of EIA Scoping Report) and queried use of finalised 2020 ASR.

SCOPE OF ASSESSMENT

- 8.3.10. An EIA Scoping Report has been submitted to NWBC in November 2020 (**Appendix 1.1 of Volume 3**). This section provides the scope of the assessment presented within this chapter, as outlined in the EIA Scoping Report:
- 8.3.11. The scope of the assessment has been determined through completion of the following tasks:
- A review of NWBC's latest published Local Air Quality Management (LAQM) review and assessment reports and monitoring data for the area surrounding the Proposed Development, including data sources from DEFRA;
 - A desk study to confirm the location of nearby existing receptors that may be sensitive to changes in local air quality as a consequence of the proposed development; and
 - A review of the baseline and future opening year (*without* and *with* development) traffic data relating to the proposed development, as provided by the Project Transport Consultant.
- 8.3.12. The assessment has focussed on the potential impacts on local air quality associated with:
- Fugitive dust and PM₁₀ generated by on-site activities during the construction phase;
 - Increases in pollutant concentrations because of exhaust emissions arising from construction traffic and plant, known as non-road mobile machinery (NRMM); and
 - Increases in pollutant concentrations because of exhaust emissions arising from traffic generated by the Proposed Development once operational at existing receptor locations.

ASSESSMENT METHODOLOGY

- 8.3.13. The proposed development proposals can be classified as a 'Major' development in consideration of the NWBC Air Quality & Planning SPD²⁵ as the overall project is scheduled for EIA and air quality is presented as a material consideration. The level of assessment required for a 'Major' development is outlined in more detail in the NWBC Air Quality & Planning SPD²⁵.
- 8.3.14. The technical approach to the air quality assessment has been made in accordance with the DEFRA LAQM.TG16²² and aforementioned IAQM guidance^{23,24} and NWBC Air Quality & Planning SPD²⁵ documents.
- 8.3.15. The following assessment methodology for this chapter is outlined below, to take into account the appropriate level of air quality assessment required:

Construction Phase

Fugitive Dust and Particulate Matter (PM₁₀) Emissions

- 8.3.16. The assessment of local air quality impacts due to the release of fugitive dust, including particulates (PM₁₀), during the construction phase has been informed by the methodology detailed in the IAQM guidance²³.
- 8.3.17. Full details of the construction assessment methodology are provided in **Appendix 8.3 of Volume 3: Construction Phase Assessment**.
- 8.3.18. The assessment during the construction phase has focussed on potential impacts associated with fugitive dust and PM₁₀ emissions from the following activities likely throughout the construction phase:
- Demolition;
 - Earthworks;

- Construction; and,
- Trackout (dust generating material which leaves the site via attachment to tyres).

8.3.19. For human receptors, amenity impacts from dust soiling and human health effects due to increases in exposure to PM₁₀ have been assessed. Where required for ecological receptors, potential harm to sensitive habitats and plant communities from dust deposition have been assessed. Factors including the scale and nature of activity, in addition to the sensitivity of the area, have been considered when assessing the risk of dust impacts.

Construction Led Traffic and NRMM

8.3.20. In addition to impacts on local air quality due to on-site construction activities, exhaust emissions from construction vehicles and NRMM may have an impact on local air quality adjacent to the routes used by these vehicles to access the proposed development and within the proposed development itself.

8.3.21. As information on the number of vehicles and NRMM associated with the construction phase was not available at the time of writing, a qualitative assessment of their impact on local air quality has been completed using professional judgement and by considering the following:

- The number and type of construction traffic and plant likely to be generated by this phase of the proposed development;
- The number and proximity of sensitive receptors to the proposed development and along the likely routes to be used by construction vehicles; and,
- The likely duration of the construction phase and the nature of the construction activities carried out.

Operational Phase

Road Vehicle Exhaust Emissions

8.3.22. The road vehicle exhaust emissions assessment focussed on the predicted changes in concentrations of specific air pollutants at identified sensitive receptors, which are associated with changes in vehicle emissions attributed to the operation of the proposed development. The assessed vehicle pollutants comprise NO₂, PM₁₀ and PM_{2.5}.

Assessment Scenarios

8.3.23. The road vehicle exhaust emissions assessment focussed on the following scenarios, for which traffic data were provided to facilitate atmospheric dispersion modelling of vehicle emissions using Cambridge Environmental Research Consultants Ltd (CERC)'s Atmospheric Dispersion Modelling System (ADMS) - Roads v5.0.0.1 model:

- Base year of 2019 to facilitate model verification using local authority monitoring data;
- Opening year of 2026, *without the Proposed Development (DM)*;
- Opening year of 2026, *with the Proposed Development (DS)*;
- Future year of 2041, *without the Proposed Development (DM)*; and
- Future year of 2041, *with the Proposed Development (DS)*.

8.3.24. The base year of 2019 has been assessed, to enable verification of the model results as local authority monitoring data has been made available to do so. This base year also aligns with the representative meteorological data and traffic data year (2019) provided for the assessment.

Traffic Data

- 8.3.25. The traffic data for all scenarios has been provided to WSP (via Vectos) and has been derived from the PARAMICS model. Traffic data for local roads in the vicinity of the Proposed Development has been provided.
- 8.3.26. Data for a base year of 2019 and ‘Without Proposed Development’ and ‘With Proposed Development’ scenarios for 2026 and 2041 were provided. The traffic flows for the ‘Without Proposed Development’ scenario do not include any contribution to road traffic from the Proposed Development itself. The traffic flows for the ‘With Proposed Development’ scenario includes a contribution from the Proposed Development.
- 8.3.27. Committed developments that are expected to influence local traffic flows have been accounted for in the traffic data flows.

Vehicle Emission Factors

- 8.3.28. Vehicle emission factors for use in the assessment have been obtained from the DEFRA Emission Factor Toolkit (EFT) version 10.1²⁸. The EFT allows for the calculation of emission factors arising from road traffic for all years between 2018 and 2030.
- 8.3.29. For the predictions of future year emissions, the toolkit considers factors such as anticipated advances in vehicle technology, changes in vehicle fleet composition and the uptake in low emission vehicles, such that vehicle emissions are assumed to reduce over time.

Conversion of NO_x to NO₂

- 8.3.30. Road contributions of NO_x (road-NO_x) were predicted using the ADMS-Roads model. The proportion of road-NO_x predicted to be converted to NO₂ at the identified receptor locations was derived using the NO_x to NO₂ calculator version 8.1²⁹, as provided by DEFRA.

Selection of Background Concentrations

- 8.3.31. Background air pollutant concentrations used in the assessment have been taken from the national maps provided on the DEFRA website³⁰, where background concentrations of those pollutants included within the AQS⁹ have been mapped at a grid resolution of 1 km x 1 km for the whole of the UK. Estimated background concentrations are available for all years between 2018 and 2030.
- 8.3.32. The maps assume that background concentrations will improve (i.e. reduce) over time, in line with the predicted reduction in vehicle emissions, and emissions from other sources.

Meteorological Data

- 8.3.33. Meteorological data, such as wind speed and direction, are used by the model to determine pollutant dispersion and levels of dilution in the lower atmosphere.

²⁸ DEFRA (2020) *Emissions Factor Toolkit (EFT) version 10.1* [online] Available at: https://laqm.defra.gov.uk/documents/EFT2020_v10.1.xlsb

²⁹ DEFRA (2020) *NO_x to NO₂ Calculator (version 8.1)* [online] Available at: <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxsector>

³⁰ DEFRA (2018) *Background Mapping data for local authorities – 2018* [online] Available at: <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>

8.3.34. Meteorological data used in the model were obtained from the Met Office observing station at Coleshill for 2019. This station is considered to provide data representative of the meteorological conditions at the study area.

8.3.35. A wind rose plot of the Coleshill meteorological site is provided in **Appendix 8.4 of Volume 3: Operational Phase Assessment**.

Model Verification

8.3.36. The ADMS-Roads dispersion model has been widely validated for this type of assessment and is fit for purpose. Model validation carried out by the software developer will not have included validation near the proposed development.

8.3.37. To determine the performance of the model at a local level, a comparison of modelled results with the results of monitoring carried out within the study area was undertaken. This process of verification aims to minimise modelling uncertainty and systematic error by correcting modelled results by an adjustment factor to gain greater confidence in the final results, and was carried out following the methodology specified in Chapter 7, Section 4, of LAQM.TG16²².

8.3.38. Published NO₂ diffusion tube monitoring results from NWBC were used to determine the baseline annual mean NO₂ concentrations within the vicinity of the proposed development. 2019 NO₂ data were used to facilitate model verification. The location of the diffusion tube monitoring sites is illustrated in **Figure 8-2 of Volume 4: Monitoring Location Plan**.

8.3.39. Details of the verification factor calculations are presented in **Appendix 8.4 of Volume 3: Operational Phase Assessment**. A factor of **4.25** has been derived during the verification process, which indicated that the dispersion model is under-predicting. This factor was applied to the model road-NO_x (oxides of nitrogen) outputs prior to conversion to annual mean NO₂ concentrations utilising the NO_x to NO₂ calculator²⁹

8.3.40. Verification of PM₁₀ and PM_{2.5} has been completed using the same factor determined through verification of NO₂ concentrations, in accordance with LAQM.TG16²², which states '*...in the absence of any PM₁₀ (and PM_{2.5}) data for verification, it may be appropriate to apply the road- NO_x adjustment to the modelled road -PM₁₀/ road-PM_{2.5}*'

8.3.41. As local roadside monitoring data were not available for PM₁₀ or PM_{2.5}, the modelled road-PM₁₀ and road PM_{2.5} components have been adjusted by the verification factor obtained for NO_x before adding to the appropriate background concentration.

Designated Habitats

8.3.42. In accordance with IAQM guidance²⁶, a designated habitat is included for assessment where it is a:

- Special Area of Conservation (SAC) or Candidate Special Area of Conservation (cSAC);
- Special Protection Area (SPA) or proposed Special Protection Area (pSPA);
- Site listed under the Convention on Wetlands and Wildfowl (RAMSAR); or
- Site of Specific Scientific Interest (SSSI); and
- Other designations of principle importance, such as local nature reserves (LNR), local wildlife sites (LWS), nature improvement areas (NIA), ancient woodland (AWO) and veteran trees.

8.3.43. The respective designated habitats considered for this assessment are illustrated in **Figure 8-3 of Volume 4: Modelled Ecological Receptors**. Four designated habitats were found within 200m of the affected road network, these comprised one SSSI, one veteran tree and two AWO. Veteran trees are

not defined within the IAQM guidance²⁶, however their assessment is a requirement within the DMRB guidance²⁷, therefore they have been included within this assessment.

Treatment of Predicted Pollutant Concentrations

- 8.3.44. LAQM.TG16²² advises that exceedances of the hourly mean NO₂ objective are unlikely to occur where annual mean concentrations are below 60µg/m³, and it provides guidance on the approach that should be taken if either measured or predicted annual mean NO₂ concentrations are 60µg/m³ or above.
- 8.3.45. The joint EPUK and IAQM²⁴ guidance, and LAQM.TG16²² provides an approach to assessing the relationship between annual mean and daily mean concentrations of PM₁₀. Potential exceedances of the daily objective are more likely where the annual mean concentration is over 32µg/m³.
- 8.3.46. The results of the atmospheric dispersion modelling at each identified receptor has been compared to the respective AQS⁹ values, set for the protection of human health, and where applicable, ecosystems, to evaluate the potential for exceedances in all scenarios.
- 8.3.47. Further detailed information on the modelling process, input data and the model verification and adjustment procedure are presented in **Appendix 8.4 of Volume 3: Operational Phase Assessment**.

Damage Cost Calculation

- 8.3.48. In line with the NWBC Air Quality & Planning SPD²⁵ the calculation of pollutant emission costs is required for developments considered to be classified as 'Major' proposals. As the proposed development is scheduled for EIA and air quality is a material consideration, it is classified as a 'Major' development.
- 8.3.49. The pollutant emissions costs calculation aims to identify the environmental damage costs associated with the proposed development and determine the cost (monetary value) of mitigation that is expected to be spent on impact control measures. The calculation utilises the most recent DEFRA EFT²⁸ to estimate the change in pollutant emissions associated with a proposed development and the latest DEFRA Air Quality Appraisal: Damage Cost Guidance and toolkit calculation spreadsheet³¹ for the specific pollutants of interest, to calculate the resultant damage cost. The DEFRA 'damage costs' are a set of pre-calculated values, expressed in cost per tonne (£ / tonne) of emissions, to enable proportionate analysis when assessing relatively small impacts on air quality.
- 8.3.50. The damage cost calculation process includes:
- Additional trip rates generated by the proposed development;
 - The pollutant emissions of concern (PM₁₀ / PM_{2.5} and NO_x) calculated from the DEFRA EFT²⁸;
 - The air quality damage costs calculation for the specific pollutant emissions; and
 - The result is totalled for a five-year period to enable mitigation implementation.
- 8.3.51. The damage cost calculation is summarised below:

³¹ DEFRA (2020) *Air Quality Appraisal: Damage Cost Guidance* [online] Available at: <https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance>

‘Road Transport Emission Increase = The sum of [Estimated trip rate for 5 years x Emission rate per 10 km per vehicle type x Damage Costs]’

SIGNIFICANCE CRITERIA

Construction Phase

Fugitive Dust and Particulate Matter (PM₁₀) Emissions

- 8.3.52. The significance of effects associated with dust and particulate generated from on-site construction activities has been determined through professional judgement and the application of the IAQM assessment methodology²³, which is summarised in **Appendix 8-3 of Volume 3: Construction Phase Assessment**.
- 8.3.53. Step four of the IAQM guidance²³ states that ‘for almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation’.
- 8.3.54. The outcomes of the construction dust assessment are used to define appropriate mitigation measures to reduce the possibility of adverse effects from the construction phase of the proposed development and, as such, does not identify specific assessment significance criteria.
- 8.3.55. The IAQM guidance²³ states in Section 2 in the terminology definition of effects that ‘in the context of construction impacts any effect will usually be adverse, however professional judgement is required to determine whether this adverse effect is significant based on the evidence presented’ and in the Section 1 introduction text that ‘it is anticipated that with the implementation of effective site-specific mitigation measures the environmental effect will not be significant in most cases’.

Operational Phase

Road Vehicle Exhaust Emissions

- 8.3.56. The approach provided in the joint EPUK and IAQM²⁴ guidance has been used within this assessment to assist in describing the air quality effects of additional emissions from traffic generated by the proposed development once operational.
- 8.3.57. This guidance recommends that the degree of an impact is described by expressing the magnitude of incremental change in pollution concentration as a proportion of the relevant assessment level and examining this change in the context of the new total concentration and its relationship with the assessment criterion, as summarised in **Table 8-3: Impact Descriptors for Individual Receptors**.

Table 8-3 - Impact Descriptors for Individual Receptors

Annual Mean Concentration at Receptors in Assessment Year	% Change in Concentration Relative to AQAL			
	1	2-5	6-10	More than 10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Annual Mean Concentration at Receptors in Assessment Year	% Change in Concentration Relative to AQAL			
	1	2-5	6-10	More than 10
AQAL = Air Quality Assessment Level, which for this assessment related to the UK AQS ⁹ objectives. Where the % change in concentrations is less than 0.5%, the change is described as 'Negligible' regardless of the concentration. When defining the concentration as a percentage of the AQAL, 'without development' concentration should be used where there is a decrease in pollutant concentration and the 'with development;' concentration where there is an increase. Where concentrations increase, the impact is described as adverse, and where it decreases as beneficial.				

8.3.58. The joint EPUK and IAQM²⁴ guidance notes that the criteria in **Table 8-3: Impact Descriptors for Individual Receptors** should be used to describe impacts at individual receptors and should be considered as a starting point to make a judgement on significance of effects, as other influences may need to be accounted for. The joint EPUK and IAQM²⁴ guidance states that the assessment of overall significance should be based on professional judgement, considering several factors, including:

- The existing and future air quality in the absence of the development;
- The extent of current and future population exposure to the impacts; and,
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

8.3.59. The joint EPUK and IAQM²⁴ guidance states that for most road transport related emissions, long-term average concentrations are the most useful for evaluating the impacts. The guidance does not include criteria for determining the significance of the effect on hourly mean NO₂ concentrations or daily mean PM₁₀ concentrations. The significance of effects of hourly mean NO₂ and daily mean PM₁₀ concentrations arising from the operational phase have therefore been determined qualitatively using professional judgement and the principles described above.

8.3.60. The joint EPUK and IAQM²⁴ guidance states that *'Where the air quality is such that an air quality objective at the building facade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure.'*

8.3.61. The joint EPUK and IAQM guidance²⁴ outlines the judgement of significance below:

'One of the relevant factors in the judgement of the overall significance of effect may relate to the potential for cumulative impacts and, in such circumstances, several impacts that are described as 'slight' individually could, taken together, be regarded as having a significant effect for the purposes of air quality management in an area, especially where it is proving difficult to reduce concentrations of a pollutant. Conversely, a 'moderate' or 'substantial' impact may not have a significant effect if it is confined to a very small area and where it is not obviously the cause of harm to human health.'

EFFECT SIGNIFICANCE

8.3.62. The following terms have been used to define the significance of the effects identified and apply to both beneficial and adverse effects.

Construction Phase

8.3.63. The following terms have been defined, based on the level of risk determined as part of the IAQM Construction Dust guidance²³ to describe the significance of effect.

- **Major effect:** where the proposed development could be expected to have a very significant effect (either beneficial or adverse) on receptors (e.g. a high risk of human impacts or dust soiling);
- **Moderate effect:** where the proposed development could be expected to have a noticeable effect (either beneficial or adverse on receptors (e.g. a medium risk of human impacts or dust soiling);
- **Minor effect:** where the proposed development could be expected to result in a small, barely noticeable effect (either positive or negative) on receptors (e.g. a low risk of human impacts or dust soiling); and,
- **Negligible:** where no discernible effect is expected because of the proposed development on receptors (e.g. a negligible risk of human health impacts or dust soiling).

Operational Phase

Road Vehicle Exhaust Emissions

8.3.64. The following terms have been defined, based on the magnitudes of impact descriptors (see **Table 8-3: Impact Descriptors for Individual Receptors**) provided in the joint EPUK and IAQM guidance²⁴ to describe the significance of effect.

- **Substantial effect:** where the proposed development could be expected to cause a substantial magnitude of change (either beneficial or adverse) to annual mean NO₂, PM₁₀ or PM_{2.5} concentrations at existing sensitive locations (such as residential dwellings or schools);
- **Moderate effect:** where the proposed development could be expected to cause a moderate magnitude of change (either beneficial or adverse) to annual mean NO₂, PM₁₀ or PM_{2.5} concentrations at existing sensitive locations;
- **Minor effect:** where the proposed development could be expected to cause a slight magnitude of change (either beneficial or adverse) to annual mean NO₂, PM₁₀ or PM_{2.5} concentrations at existing sensitive locations; and,
- **Negligible:** where no discernible effect is expected because of the proposed development on receptors (e.g., a negligible magnitude of change to annual mean NO₂, PM₁₀ and PM_{2.5} concentrations at existing sensitive locations).

8.3.65. As set out in **Chapter 5: Approach to EIA**, effects that are classified as **moderate or above** are considered to be **significant**. Effects classified as below **moderate** are considered to be **not significant**.

Designated Habitats Assessment

8.3.66. The results of the local air quality impact assessment have been evaluated with reference to the IAQM – Designated Nature Conservation Sites²⁶ guidance document.

8.3.67. An increment of 1% (or less) of the relevant long-term critical level (NO_x) or critical load (N-deposition) alone is considered inconsequential. A change of such magnitude, i.e. two orders below the criterion for harm to occur, is challenging to measure (even by the most precise air quality instrument) and difficult to distinguish from natural fluctuations in measured data (due to other variables such as variations in emissions and weather). For this reason, and others, it has been used as a precautionary screening criterion.

8.3.68. The change (which applies to both annual mean NO_x concentrations and N-deposition rates) should be calculated with the project alone and in-combination with other projects and plans to identify whether the critical levels or critical loads will be exceeded. This information should be passed on to

the ecologist for appraisal if a change of 1% of the critical level/load either alone or in-combination is predicted.

ASSUMPTIONS AND LIMITATIONS

- 8.3.69. To ensure transparency within the EIA process, the following limitations and assumptions were identified.
- 8.3.70. There are uncertainties associated with both measured and predicted concentrations. The model (ADMS-Roads) used in this assessment relies on input data (including predicted traffic flows), which also have uncertainties associated with them. The model itself simplifies complex physical systems into a range of algorithms. In addition, local micro-climatic conditions may affect the concentrations of pollutants that the ADMS-Roads model will not consider.
- 8.3.71. To reduce the uncertainty associated with predicted concentrations, model verification has been carried out following guidance set out in LAQM.TG16²². As the model has been verified against local monitoring data and adjusted accordingly, there can be reasonable confidence in the predicted concentrations. See **Appendix 8.4 of Volume 3: Operational Phase Assessment** for more information on the model verification completed for this study.
- 8.3.72. The average uncertainty (derived as the root mean square error) of the air quality model equates to $3.7 \mu\text{g}/\text{m}^3$ for annual mean NO_2 (see **Appendix 8.4 of Volume 3: Operational Phase Assessment**). As such, the modelled receptors that are predicted to experience NO_2 concentrations above $36.3 \mu\text{g}/\text{m}^3$ are considered to be at potential risk of exceeding the annual mean objective of $40 \mu\text{g}/\text{m}^3$.
- 8.3.73. Due to the limited details on the construction methods programme, the assessment has been completed using the information that is available and professional judgement on the likely scale of activity and sensitivity of the receiving environment.
- 8.3.74. Habitats present in designated habitat sites were identified using desk-study sources alone and are not based on field survey. Use of field survey data would provide detailed information on the vegetation communities present (e.g. it is not possible to determine whether acid grassland or neutral grassland is present from interpretation of aerial imagery alone). Critical thresholds are available on APIS for a subset of the range of habitats present in the field and in all instances the closest matching habitat was chosen. Furthermore, where there was uncertainty over which habitat is present (e.g. type of grassland), a lower (more onerous) critical threshold has been applied to ensure that a precautionary approach is adopted.
- 8.3.75. The damage cost calculations contained within this assessment include their own assumptions, namely:
- All generated vehicle trips were assumed to comprise of both LDV and HDV; and
 - All generated trip distances were assumed to be 10 km.
 - A 2% uplift per annum is applied in the damage cost calculation toolkit³¹ to reflect the assumption that GDP growth per capital occurs at this level.
 - The damage cost calculation considers $\text{PM}_{2.5}$ instead of PM_{10} . As such, no conversion from $\text{PM}_{2.5}$ to PM_{10} has been carried out.

8.4 BASELINE CONDITIONS

8.4.1. This section presents a summary of baseline conditions assessment across the study area presented for NWBC and supplemented with monitoring data for those sites situated in proximity to the proposed development from Tamworth Borough Council.

LOCAL AIR QUALITY MANAGEMENT

North Warwickshire Borough Council (NWBC)

8.4.2. A review of the latest LAQM review and assessment report published by NWBC³² confirmed that there are no AQMAs declared within their administrative area.

8.4.3. The 2020 ASR³² provides the following narrative:

- *'The monitoring over the past 12 months has highlighted a couple of hotspots and as such, further monitoring within the localities of these has begun for 2020. A detailed or further assessment has not been considered necessary for any pollutant at this time.'*
- *'There are a number of measures being undertaken to deal with air quality at a regional level. At a local level North Warwickshire Borough Council have increased the locations of monitoring for NO₂ from January 2020 based on the results obtained in 2019. The results of which will be submitted in next year's annual status report.'*
- *'An Air Quality Supplementary Planning Document²⁵ was also approved by the Council in September 2019 in a bid to help reduce air pollution issues at the planning stage.'*

LOCAL EMISSIONS SOURCES

8.4.4. Within the local vicinity of the Proposed Development, current emissions sources are from vehicular traffic from the A5 Fazeley – Two Gates – Wilnecote Bypass, A5 Watling Street and the M42 Motorway.

8.4.5. Emission sources may also include other industrial, logistics and distribution-led developments including St. Modwen Park located to the south of the proposed development, along Danny Morson Way to the south-east and B5090 Pennine Way to the north-west respectively.

LOCAL AIR QUALITY MONITORING

North Warwickshire Borough Council (NWBC)

8.4.6. No continuous monitoring is completed by NWBC within their area of administration. However, monitoring is carried out at 19 no NO₂ passive diffusion tube sites across the Borough.

8.4.7. Annual mean NO₂ monitoring results from those NWBC monitoring locations within 2km of the proposed development site boundary between 2017 and 2019, as identified within the 2020 provided in **Table 8-4: NWBC Annual NO₂ Monitoring Data – 2017 to 2019.**

³² North Warwickshire Borough Council (2020) *North Warwickshire Borough Council 2020 Air Quality Annual Status Report* [online] Available at: https://www.northwarks.gov.uk/download/downloads/id/8494/air_quality_progress_report_2020.pdf

Table 8-4 - NWBC Annual NO₂ Monitoring Data – 2017 to 2019

Site ID	Location	Type	Distance from Site (km)	Annual Mean Concentration (µg/m ³)		
				2017	2018	2019
4	Bridge Street, Polesworth	Roadside	1.7	-	-	24.9
5	Long Street, Dordon	Roadside	1.2	-	-	29.4
6	New Street, Dordon	Roadside	1.1	32.1	29.9	28.6
7	A5 Watling Street, Dordon	Roadside	1.1	-	-	46.8 ⁽¹⁾
Annual Mean Objective				40 µg/m³		

* Results rounded to 1 decimal place **Bold** – Exceedances of the annual mean objective (1) - Distance corrected to nearest relevant public exposure.

8.4.8. The data from **Table 8-4: NWBC Annual NO₂ Monitoring Data – 2017 to 2019** shows that annual mean concentrations have been below the annual mean objective in 2019 for three of the identified passive diffusion tube locations within 2km of the Proposed Development. However, an exceedance is identified at the '7' diffusion tube site along A5 Watling Street, near Dordon. This diffusion tube is situated along a main arterial route but is also adjacent to a bus stop and a roadside parking area, thus there is potential for relatively increased emissions at this location due to idling bus/car engines, which are likely to contribute to the recorded elevated concentration in 2019.

Tamworth Borough Council (Tamworth BC)

8.4.9. According to the 2020 Air Quality ASR³³, Tamworth BC operated a network of 14no NO₂ passive diffusion tube sites during 2019. Annual mean NO₂ monitoring results from those Tamworth BC monitoring sites within 2km of the proposed development site boundary between 2017 and 2019 are provided in **Table 8-5: Tamworth BC Annual NO₂ Monitoring Data – 2017 to 2019**.

Table 8-5 – Tamworth BC Annual NO₂ Monitoring Data - 2017 to 2019

Site ID	Location	Type	Distance from Site (km)	Annual Mean Concentration (µg/m ³)		
				2017	2018	2019
Q2	50 Lakeland Drive	Roadside	1.1	24.2	23.8	22.7
Q5	2 Wessenden	Roadside	0.7	25.8	25.0	25.6
11N	12 Brookside Way	Urban Background	1.5	19.5	19.7	20.4
Annual Mean Objective				40 µg/m³		

³³ Tamworth Borough Council (2020) *2020 Air Quality Annual Status Report* [online] Available at: https://www.tamworth.gov.uk/sites/default/files/environment_docs/Tamworth-ASR-2020.pdf

8.4.10. The data from **Table 8-5: TBC Annual NO₂ Monitoring Data – 2017 to 2019** shows that annual mean concentrations have been below the annual mean objective since 2017 for all three identified Tamworth BC passive diffusion tube locations within 2km of the proposed development.

BACKGROUND POLLUTANT CONCENTRATIONS

8.4.11. DEFRA provides mapped estimates of background pollution concentrations³⁰ for oxides of nitrogen (NO_x), NO₂, PM₁₀ and PM_{2.5} across the UK at a grid resolution of 1 km x 1 km, covering each year from 2018 to 2030.

8.4.12. Future year projections have been developed on the base year for the background maps, which is currently 2018. The maps include a breakdown of background concentrations by emission source, including road and industrial sources which have been calibrated against 2018 UK monitoring and meteorological data.

8.4.13. The background NO₂, PM₁₀ and PM_{2.5} annual mean concentrations for the 1 km x 1 km grid squares encompassing the proposed development and surrounding area for the base year of 2019, opening year of 2026 and 2030 are provided in **Table 8-6: Background Pollutant Concentrations (µg/m³) – 2019, 2026 and 2030**. 2030 is the latest year for which background concentrations are available via DEFRA, therefore these values have been used when assessing the future year scenario. This is likely to yield conservative results for annual mean NO₂ concentrations in the Future Year (2041) scenario if current trends continue with respect to declining vehicle emissions of NO_x.

Table 8-6 – Background Pollutant Concentrations (µg/m³) – 2019, 2026 and 2030

Grid Square	NO ₂			PM ₁₀			PM _{2.5}		
	2019	2026	2030	2019	2026	2030	2019	2026	2030
425500, 300500	8.6	7.3	7.0	14.6	13.7	13.7	8.9	8.2	8.2
426500, 300500	8.6	7.2	6.9	12.9	12.0	11.9	8.4	7.6	7.6
424500, 300500	8.8	7.4	7.0	15.9	15.0	15.0	9.5	8.8	8.8
424500, 301500	9.3	7.8	7.4	15.3	14.4	14.4	9.5	8.8	8.8

8.4.14. The annual mean background concentrations contained within **Table 8-6: Background Pollutant Concentrations (µg/m³) – 2019, 2026 and 2030** are observed to be below the respective air quality objectives for NO₂, PM₁₀ and PM_{2.5}.

SENSITIVE RECEPTORS

8.4.15. Sensitive receptors are locations in which the public or sensitive ecological habitats may be exposed to pollutants resulting from activities associated with the proposed development. These will include locations sensitive to an increase in dust deposition and PM₁₀ exposure as a result of on-site construction activities, and locations sensitive to exposure to gaseous pollutants emitted from the exhausts of construction and operational traffic associated with the proposed development.

Construction Phase

- 8.4.16. Existing residential areas are located within 350m of the proposed development site boundary and approach roads. As such, a construction dust assessment has been conducted with reference to IAQM guidance²³ (**Appendix 8.3 of Volume 3: Construction Phase Assessment**).
- 8.4.17. Distance bandings contained within **Table 8.3-2**, **Table 8.3-3** and **Table 8.3-4** of **Appendix 8.3 of Volume 3: Construction Phase Assessment** were analysed based on the proposed development to identify potentially sensitive receptors.
- 8.4.18. The number and location of existing ‘human’ receptors within each band is detailed in :
- 8.4.19. **Table 8-7:**

Table 8-7 – Construction Phase Assessment - Receptor Count within 350m of Likely Construction Activities

Distance from Site Boundary (m)	Sensitive Receptor Count			
	Residential	Educational	Medical	Total
Less than 20m	0	0	0	0
Between 20m – 50m	0	0	0	0
Between 50m – 100m	3	0	0	3
Between 100m – 350m	10	0	0	10

- 8.4.20. The highest risk receptors in terms of sensitivity are those that are downwind and within 50m of potential dust-generating construction activities.
- 8.4.21. A wind rose derived from data recorded at Coleshill for the year of 2019 demonstrates that the prevailing wind is from south. Therefore, those receptors to the north of, and within proximity to the construction activities are more likely to be affected by fugitive dust releases.
- 8.4.22. A wind rose showing the recorded wind speed and direction data is presented in **Appendix 8.4 of Volume 3: Operational Phase Assessment**.
- 8.4.23. There are no statutory designated ecological sites within 50m of the proposed development site boundary, therefore, as recommended by guidance from the IAQM²³, ecological sites have not been considered as part of the construction phase dust assessment.

Operational Phase

- 8.4.24. Locations that are sensitive to pollutants emitted from engine exhausts include places where members of the public are likely to be regularly present over the period of time prescribed in the AQS⁹.
- 8.4.25. For instance, on a footpath where exposure will be transient (for the duration of passage along that path), comparison with a short-term standard (i.e. 15-minute mean or hourly mean) may be relevant. At a school or adjacent to a private dwelling, where exposure may be for longer periods, comparison with a long-term standard (such as daily mean or annual mean) may be more appropriate. Box 1.1 of LAQM.TG16²² provides examples of the locations where the air quality objectives should and should not apply.

- 8.4.26. To complete the assessment of operational phase impacts, a number of ‘receptors’ representative of locations of relevant public exposure were identified at which pollution concentrations were predicted. Receptors have been located adjacent to the roads that are likely to experience the greatest change in traffic flows or composition, and therefore NO₂, PM₁₀ and PM_{2.5} concentrations, due to the proposed development.
- 8.4.27. The locations of the assessment receptors are shown on **Figure 8-4 of Volume 4: Modelled Human Receptors** and listed in **Table 8-8: Operational Phase Assessment - Considered Existing Receptor Locations**, based on relevant exposure locations outlined within Box 1.1 of LAQM.TG16²².
- 8.4.28. Receptors were identified by using Ordnance Survey Open Data Mapping sources within a Geographical Information System (GIS) platform.

Table 8-8 – Operational Phase Assessment - Considered Existing Receptor Locations

Receptor	OS Grid Reference (m)		Height Above Ground Level (m)
	X	Y	
<u>Existing Receptors</u>			
R1	423860.2	301083.6	1.5
R2	423817.9	300945.7	1.5
R3	425061.6	300473.4	1.5
R4	425184.3	300470.0	1.5
R5	426073.3	300147.1	1.5
R6	426192.6	300441.7	1.5
R7	426207.1	300419.0	1.5
R8	426156.0	300061.6	1.5
R9	426199.2	300085.9	4.5
R10	427142.9	299612.9	1.5
R11	427377.8	299466.6	1.5
R12	427496.8	299440.1	1.5
R13	427828.0	299664.4	1.5
R14	428305.3	299054.6	1.5
R15	428510.4	298916.4	1.5
R16	430342.7	298066.6	1.5
R17	430779.9	298161.1	1.5
R18	430785.3	297999.4	1.5
R19	430963.8	297875.3	1.5
R20	430984.6	298149.9	1.5

Receptor	OS Grid Reference (m)		Height Above Ground Level (m)
	X	Y	
R21	431099.0	298000.9	1.5
R22	431326.3	297965.4	1.5
R23	431304.2	297596.8	1.5
R24	431800.3	297539.2	1.5
R25	431980.1	297410.1	1.5
R26	432103.3	297263.4	1.5
R27	432453.5	297059.6	1.5
<u>Proposed Receptors</u>			
PR1	424777.8	300623.0	1.5
PR2	424517.5	300761.6	1.5
PR3	424671.0	301124.6	1.5

ECOLOGICAL CONSERVATION SITES (DESIGNATED HABITATS)

- 8.4.29. A desk-based review using the DEFRA MAGIC web-based interactive mapping service³⁴ has been carried out to identify statutory designated sites of ecological or nature conservation importance within 200m of any road considered as part of the proposal's ARN to determine the potential impact resulting from operational phase traffic emissions.
- 8.4.30. In addition, data taken from Natural England Open Data website³⁵ has been used to specify areas of ancient woodland (AWO) which were situated within 200m of the proposal's ARN.
- 8.4.31. The receptor locations representing the designated habitats are illustrated **Figure 8-3 of Volume 4: Modelled Ecological Receptors**.
- 8.4.32. Background pollutant concentrations and deposition rates for designated habitats were obtained from the APIS website³⁶ and are given in **Table 8-9: Ecological Designations – Nitrogen Critical Loads and Current Loads (kgN/ha/yr)**.

³⁴ Natural England and DEFRA (2020) *Multi-Agency Geographic Information for the Countryside (MAGIC)* [online] Available at: <https://magic.defra.gov.uk/>

³⁵ Natural England (2020) *Ancient Woodland (England)* [online] Available at: https://naturalengland-defra.opendata.arcgis.com/datasets/a14064ca50e242c4a92d020764a6d9df_0

³⁶ UK Centre for Ecology and Hydrology (2020) *UK Air Pollution Information System (APIS)* [online] Available at: <http://www.apis.ac.uk/>

Table 8-9 - Ecological Designations – Nitrogen Critical Loads and Current Loads (kgN/ha/yr)

Name / Type	Main Habitat Types	NO _x Concentration (µg/m ³)	Critical Load Range (kgN/ha/yr)		Baseline N Deposition Rate (kgN/ha/yr)
			Lower	Upper	
Ancient / Veteran Tree Locations					
80502	Sessile Oak	19.6	10	20	36.5
Ancient Woodland (AWO)					
Grendon Wood	Ancient Semi-Natural Woodland	16.5	10	20	35.8
1410853 (Unnamed)		16.0	10	20	35.8
Sites of Specific Scientific Interest (SSSI)					
Alvecote Pools	Pioneer, low-mid, mid-upper saltmarshes	18.8	20	30	36.5

PREDICTED BASELINE ASSESSMENT

- 8.4.33. A baseline modelling exercise has been carried out for the proposed development, accounting for the identified sensitive receptor locations included in the operational phase assessment. The modelling has been carried out for a base year of 2019, for which local authority data is available to facilitate model verification.
- 8.4.34. A summary of the assessment results is provided below. The results of the baseline modelling assessment are presented in **Appendix 8.5 of Volume 3: Schedule of Dispersion Model Results**.

Human Health

Annual and Hourly Mean NO₂ Concentrations

- 8.4.35. In the 2019 baseline model scenario, the predicted concentrations for the modelled existing receptor locations are above the annual mean AQS⁹ objective of 40 µg/m³ at two receptors, R10 (51.1µg/m³) and R12 (51.8µg/m³). Both of these receptors lie on the A5, R10 is located west of Gypsy Lane and R12 is located at the roundabout in which Gypsy Lane and Long Street merge onto the A5. All other predicted concentrations for the modelled existing receptor locations are below the annual mean AQS⁹ objective.
- 8.4.36. All modelled receptors are predicted to experience an annual mean NO₂ concentration of less than 60 µg/m³. Therefore, with reference to LAQM.TG16²², exceedances of the hourly mean NO₂ AQS objective⁹ are unlikely to occur in the 2019 baseline modelling scenario.

Annual and Daily Mean PM₁₀ Concentrations

- 8.4.37. Predicted annual mean concentrations of PM₁₀ range between 13.6µg/m³ and 22.9µg/m³ in the 2019 baseline scenario.
- 8.4.38. The modelling indicates that the maximum number of days of exceedance is less than 35 days for all modelled receptors in 2019, which is below the daily mean AQS⁹ objective.

Annual Mean PM_{2.5} Concentrations

- 8.4.39. In the 2019 predicted baseline scenario, annual mean PM_{2.5} concentrations are below the AQS⁹ objective of 25 µg/m³ at all modelled receptors, ranging between 8.9µg/m³ to 14.2µg/m³.

Designated Habitats

Annual Mean NO_x

- 8.4.40. Base year annual mean NO_x concentrations were predicted to exceed the critical level (30µg/m³) at one of the designated habitat sites within 200m of the ARN – Alvecote Pools SSSI. Details for all transect receptors are included in **Appendix 8.5 of Volume 3: Schedule of Dispersion Model Results**.

N Deposition

- 8.4.41. N deposition is predicted to exceed the lower critical load for all designated habitats in base year (2019). However, this is due to the background N-Deposition values experienced at the designated habitats, which are themselves larger than the lower critical load. Details for all transect receptors are given in **Appendix 8.5 of Volume 3: Schedule of Dispersion Model Results**.

FUTURE BASELINE

- 8.4.42. Pollutant concentrations will vary in the future when compared to the baseline scenario, because of projected improvements in vehicle emissions and variations in traffic distribution across the road network, both because of the implementation of new policies and strategies, potential new road schemes for the area, changing attitudes towards driving, and improvements in fuel and vehicle technology.
- 8.4.43. As part of the operational phase assessment, the future air quality without the proposed development in the opening year (2026) and future year (2041) has been considered. A summary of the assessment results for the future baseline scenario is provided below. The results are presented in **Appendix 8.5 of Volume 3: Schedule of Dispersion Model Results**.

Opening Year: 2026

Human Health

Annual and Hourly Mean NO₂ Concentrations

- 8.4.44. In the 2026 'Without Proposed Development' model scenario, annual mean NO₂ concentrations meet the air quality objective at all modelled existing receptor locations, ranging between 9.8µg/m³ and 29.3µg/m³.
- 8.4.45. All modelled receptors are predicted to experience an annual mean NO₂ concentration of less than 60 µg/m³. Therefore, with reference to LAQM.TG16²² exceedances of the hourly mean NO₂ AQS⁹ objective are unlikely to occur in the 2026 'Without Proposed Development' modelling scenario.

Annual and Daily Mean PM₁₀ Concentrations

- 8.4.46. In the 2026 'Without Proposed Development' scenario, predicted annual mean concentrations of PM₁₀ range between 12.7µg/m³ and 22.0µg/m³. All predicted concentrations are below the annual mean AQS⁹ objective for the 2026 'Without Proposed Development' model scenario.
- 8.4.47. The modelling indicates that the maximum number of days of exceedance less than 35 days for all considered receptors in 2026, which is below the daily mean AQS⁹ objective.

Annual Mean PM_{2.5} Concentrations

8.4.48. In the 2026 'Without Proposed Development' scenario, annual mean PM_{2.5} concentrations are below the annual mean AQS⁹ objective at all modelled receptors. The modelled concentrations range from 8.2µg/m³ to 13.1µg/m³ for the 2026 'Without Proposed Development' scenario.

Designated Habitats

Annual Mean NO_x

8.4.49. In the 2026 'Without Proposed Development' scenario, annual mean NO_x concentrations were not predicted to exceed the critical level (30µg/m³) at any of the designated habitat sites within 200m of the ARN. Details for all transect receptors are included in **Appendix 8.5 of Volume 3: Schedule of Dispersion Model Results**.

N Deposition

8.4.50. N deposition is predicted to exceed the lower critical load for all designated habitats in the 2026 'Without Proposed Development' scenario. However, this is due to the background N-Deposition values experienced at the designated habitats, which are themselves larger than the lower critical load. Details for all transect receptors are given in **Appendix 8.5 of Volume 3: Schedule of Dispersion Model Results**.

Future Year: 2041

8.4.51. For both the Human Health and Designated Habitats assessment, the concentrations predicted for the Future Year (2041) scenario are lower than for the Opening Year (2026) and are well below their respective objectives. A full breakdown of these results can be found in **Appendix 8.5 of Volume 3: Schedule of Dispersion Model Results**.

8.4.52. This reduction in concentrations is due to the significant improvements in fuel and vehicle technology expected in the years following the implementation of the proposed development, such as an increased rate of penetration of cleaner Euro VI vehicles into the fleet.

8.4.53. Additionally, the DEFRA Emission Factor Toolkit (EFT) version 10.1²⁸ predicts that 7.5% of car vehicle-kilometres on England's urban roads in 2030 will be by fully electric vehicles, with the equivalent values for rural roads and motorways being 7.2% and 6.8% respectively. This proportion of fully electric vehicles will continue to rise between 2030 and 2041, therefore the assessment results are subject to embedded conservatism.

8.5 IDENTIFICATION AND VALUATION OF KEY IMPACTS (CONSTRUCTION AND OPERATIONAL)

CONSTRUCTION PHASE

Fugitive Dust and Particulate Matter (PM₁₀) Emissions

8.5.1. Construction activities that have the potential to generate and / or re-suspend dust and PM₁₀ include:

- Site clearance, including vegetation and tree removal, and where required, removal of existing below ground services and structures;
- Earthworks and surface re-profiling / sub-base works to obtain required finished floor levels;
- Foundation construction;
- Materials handling, storage, stockpiling, spillage and disposal;

- Movement of vehicles and construction traffic within the site boundary (including excavators and dumper trucks);
- Use of crushing and screening equipment / plant;
- Exhaust emissions from site plant and NRMM, especially when used at the extremes of their capacity and during mechanical breakdown;
- Construction of buildings, roads and areas of hardstanding alongside fabrication processes;
- Internal and external finishing and refurbishment; and
- Site landscaping after completion.

8.5.2. The majority of the releases are likely to occur during the 'working week'. However, for some potential release sources (e.g. exposed soil produced from significant earthwork activities) in the absence of dust control mitigation measures, dust generation has the potential to occur 24 hours per day over the period during which such activities are to take place.

8.5.3. **Appendix 8.3 of Volume 3: Construction Phase Assessment** contains the potential dust emission magnitudes, the sensitivity of the study area and the subsequent summary dusk risk table used to determine site specific mitigation, pertinent to the proposed development.

Potential Dust Emission Magnitude

8.5.4. The IAQM assessment methodology²³ (see **Appendix 8.3 of Volume 3: Construction Phase Assessment**) has been used to determine the potential dust emission magnitude for the following different dust and PM₁₀ sources: earthworks, construction and trackout. The findings of the assessment are presented below.

Earthworks

8.5.5. Earthworks undertaken prior to construction would mainly involve the excavation of topsoil and subsoil from excavation and working zones. The soil would be removed and then stored separately within designated stockpile areas. The total area covered within the application site boundary is more than 10,000 m², which falls within the IAQM range for 'large' sites²³. Not all of the application site is to be excavated or levelled and it is assumed that appropriate landscaping work will be undertaken post-construction.

8.5.6. The total mass of material that will be moved is estimated to be more than 100,000 tonnes given the overall size of the application site. It is also estimated that between 5 and 10 heavy earth moving vehicles will be active at any one time. To be conservative, the potential dust emission magnitude is defined as 'large' for earthwork activities.

Construction

8.5.7. The construction of the proposed development is likely to exceed a total building volume of 100,000 m³. The material used to construct the proposed development is anticipated to contain metal cladding, timbers and other sources of material with low potential for dust release. New road surfaces are to be in place around the proposed development, comprising asphalt or bitumen-bound mineral aggregate. The dust emission magnitude is therefore defined as 'large' for construction activities.

Trackout

8.5.8. Some information on the number of Heavy-Duty Vehicles (HDVs) associated with this phase of the development has been provided. There will be less than 100 outward HDV movements in any one

day accessing the site via A5 Watling Street for the duration of the construction phase. The potential dust emission magnitude is therefore defined as 'medium' for trackout activities.

Sensitivity of Study Area

- 8.5.9. A wind rose generated using the 2019 meteorological data from Coleshill is presented in **Appendix 8.3 of Volume 3: Construction Phase Assessment**. This shows that the prevailing wind direction is from the south. Therefore, receptors located to north of the proposed development site boundary are more likely to be affected by dust and particulate matter emitted and re-suspended during the construction phase.
- 8.5.10. Under low wind speed conditions, it is likely that fugitive dust emissions would be predominantly deposited in the area immediately surrounding the source.
- 8.5.11. There are no sensitive receptor locations identified within 20m of the application site boundary. There are less than 10 sensitive receptors identified up to 100m of the application site boundary and 10 receptors identified within 350m.
- 8.5.12. The annual mean PM₁₀ background concentration for the 1 km x 1 km grid squares encompassing the proposed development range between 12.0µg/m³ and 15.0µg/m³ in 2026 (see **Table 8-6 – Background Pollutant Concentrations (µg/m³) – 2019, 2026 and 2030**) which is well below the annual mean objective of 40 µg/m³.

Risk of Impacts

- 8.5.13. The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. The risk category identified for each construction activity has been used to determine the level of mitigation required and is outlined in **Table 8.3-8 - Summary Dust Risk table to define Site Specific Mitigation** within **Appendix 8.3 of Volume 3: Construction Phase Assessment**.
- 8.5.14. Based on the criteria detailed in the IAQM construction dust guidance²³ the proposed development site would be categorised overall as *Low Risk*.
- 8.5.15. Based on the criteria specified in **Section 8.3 of this chapter**, there is the potential for a *minor adverse* impact with regards to dust soiling and of human health effects. Therefore, in the absence of mitigation there is likely to be a direct, temporary, short-term adverse effect on nearby sensitive receptor locations of **minor** significance prior to the implementation of mitigation measures, which is considered to be **not significant**.

Construction Led Traffic and NRMM

- 8.5.16. The IAQM construction dust guidance²³ document makes the following statement in regard to NRMM and construction led traffic movements:
- 'Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed.'*
- 8.5.17. Information on the specific traffic management measures and the precise location of construction site compound entrances were not available at the time of assessment. However, it is confirmed that fewer than 100 peak construction related two-way HDV movements per day are anticipated, based on an assumed five-and-a-half-day working week.

- 8.5.18. The criteria in the joint EPUK and IAQM guidance²⁴ stipulate that further assessment of vehicle emissions is required where a change of 100 AADT in HDV movements or more is expected during the construction period. As the estimated peak construction traffic flow is below this criteria, further assessment of construction phase vehicle emissions has been scoped out from further assessment.
- 8.5.19. Final details of the exact plant and NRMM likely to be used at the proposed development site will be determined by the Contractor but are considered to comprise a range of vehicles including tracked excavating equipment and diesel generators. The number of plant and their location within the proposed development site will be variable over the construction period.
- 8.5.20. The greatest impact on air quality due to emissions from on-road vehicles and NRMM associated with the construction phase will be in the areas immediately adjacent to the proposed development site access. It is considered that the additional HDV traffic generated by the proposed development during the construction phase will be low in comparison to traffic flows currently utilising both the A5 Watling Street and the M42 Motorway (including Junction 10).
- 8.5.21. Based on the current local air quality in the area, the proximity of sensitive receptors to the roads likely to be used by construction vehicles and the likely numbers of construction vehicles and NRMM that will be employed across the proposed development site, the impacts are considered to be *negligible* and thus **not significant**, in consideration of the significance criteria published within the joint EPUK and IAQM guidance²⁴.
- 8.5.22. Therefore, in the absence of mitigation there is likely to be a direct, temporary, short-term adverse effect on nearby sensitive receptor locations of **negligible** significance prior to the implementation of mitigation measures, which is considered to be **not significant**.

OPERATIONAL PHASE

Opening Year: 2026

Human Health

- 8.5.23. Full results of the atmospheric dispersion modelling completed for the road vehicle exhaust emissions assessment are presented in **Appendix 8.5 of Volume 3: Schedule of Dispersion Model Results** and a summary is provided below:
- Annual Mean NO₂ Concentrations
- 8.5.24. The AQS⁹ objective for annual mean NO₂ is a concentration of 40 µg/m³. By 2026, the opening year of the proposed development, all predicted concentrations at each of the considered receptor locations are below the relevant AQS⁹ objective.
- 8.5.25. The highest predicted concentration of annual mean NO₂ is predicted at Receptor R12, where it is 29.3µg/m³ in the 'Without Proposed Development' scenario and 29.9µg/m³ in the 'With Proposed Development' scenario. This receptor is located at the roundabout in which Gypsy Lane and Long Street merge onto the A5.
- 8.5.26. The highest predicted increase in annual mean NO₂ concentration between the 'Without Proposed Development' and 'With Proposed Development' scenarios is predicted to occur at Receptor R10. The increase is predicted to be 0.99µg/m³, with a value of 28.5µg/m³ in the 'Without Proposed Development' scenario and 29.5µg/m³ in the 'With Development' scenario. This receptor is located on the A5, west of Gypsy Lane.

8.5.27. The predicted impacts of the proposed development on annual mean NO₂ at all receptors included in the model equate to a *negligible* impact on local air quality, in accordance with the joint EPUK and IAQM²⁴ criteria.

Hourly Mean NO₂ Concentrations

8.5.28. The annual mean NO₂ concentrations for this assessment were all predicted to be below 60 µg/m³, and therefore hourly mean NO₂ concentrations are unlikely to cause a breach of the hourly mean AQS⁹ objective.

8.5.29. This is in line with the guidance provided within LAQM.TG16²², which states '*Previous research carried out on behalf of DEFRA and the Devolved Administrations identified that exceedances of the NO₂ 1-hour mean are unlikely to occur where the annual mean is below 60 µg/m³*'. The respective impact of the proposed development on local air quality, in regard to hourly mean NO₂ concentrations at existing sensitive receptors is therefore *negligible*.

Annual Mean PM₁₀ Concentrations

8.5.30. The AQS⁹ objective for annual mean PM₁₀ is a concentration of 40 µg/m³. Predicted concentrations of PM₁₀ are well below the annual mean AQS⁹ objective at all receptors in each of the modelled opening year (2026) scenarios. The highest predicted annual mean PM₁₀ concentrations are at Receptor R10, where it is 22.0µg/m³ in the 'Without Proposed Development' scenario and 22.3µg/m³ in the 'With Proposed Development' scenario.

8.5.31. The predicted changes in annual mean PM₁₀ concentrations are all less than 1 % of the relevant AQS⁹ objective. Based on the joint EPUK and IAQM²⁴ guidance, the impact of the proposed development on annual mean PM₁₀ concentrations is *negligible*.

Daily Mean PM₁₀ Concentrations

8.5.32. The AQS⁹ objective for daily mean PM₁₀ concentrations is 50 µg/m³ to be exceeded no more than 35 times a year. There is predicted to be no exceedances of the AQS⁹ objective in both the 'Without Proposed Development' and 'With Proposed Development' scenarios. The respective impact of the Proposed Development on daily mean PM₁₀ concentrations at existing sensitive receptors is therefore considered to be *negligible*.

Annual Mean PM_{2.5} Concentrations

8.5.33. Predicted annual mean concentrations of PM_{2.5} in 2026 are all well below the AQS⁹ objective of 25 µg/m³ in all modelled scenarios. The highest predicted annual mean PM_{2.5} concentrations are at Receptor R10, where it is 13.1µg/m³ in the 'Without Proposed Development' scenario and 13.3µg/m³ in the 'With Proposed Development' scenario.

8.5.34. All changes in PM_{2.5} are predicted to be less than 1 % of the relevant AQS⁹ objective and therefore, based on the joint EPUK and IAQM²⁴ guidance, the Proposed Development is considered to have a *negligible* impact on local air quality in regard to annual mean PM_{2.5} concentrations.

Exposure of Future Inhabitants

8.5.35. Predicted concentrations of NO₂, PM₁₀ and PM_{2.5} are below the relevant objectives at all proposed receptor locations within the application site boundary. Therefore, future development is not constrained by air quality in this assessment scenario.

Risk of Impacts

- 8.5.36. The impact descriptors provided by IAQM guidance (see **Table 8-3 - Impact Descriptors for Individual Receptors**) have been adopted to describe the potential impact of the Project on local air quality at each of the identified relevant receptors.
- 8.5.37. The local air quality impacts associated with the operation of the proposed development are expected to be of *negligible* significance at all of the assessment receptors.
- 8.5.38. Given the results of the local air quality assessment and evaluation within the context of the joint EPUK and IAQM24 guidance, the impact on local air quality in regard to the proposed development is of **negligible** significance and is adjudged to be **not significant**.

Designated Habitats Assessment

- 8.5.39. Full results of the atmospheric dispersion modelling completed for the designated habitats assessment are presented in **Appendix 8.5 of Volume 3: Schedule of Dispersion Model Results** and a summary is provided below:

Annual Mean NO_x

- 8.5.40. There are no predicted exceedances of the annual mean NO_x critical level (30µg/m³) at any of the designated habitats assessed in the DM and DS scenario. The largest concentrations are predicted within the Alvecote Pools SSSI, with a concentration of 20.4µg/m³ in the DS scenario and 20.3µg/m³ in the DM scenario.
- 8.5.41. All designated habitats are predicted to experience a magnitude of change with the proposed development in operation that is equal to or below the 1% significance criterion (i.e. a change of less than or equal to 0.3 µg/m³ in the DS scenario relative to DM scenario). The largest change is predicted at the one veteran tree location, with a magnitude of change of 0.3 µg/m³.

N Deposition

- 8.5.42. Rates of annual N deposition are predicted to exceed the respective lower critical loads at each of the assessed designated habitats in both the DM and DS scenarios. This is attributed to existing background N deposition values, as reported in **Table 8-9**.
- 8.5.43. However, the impact of the proposed development (i.e. difference between DM and DS scenarios) on N deposition at the assessed designated sites is not predicted to exceed 1% of the respective lower critical load and therefore equates to an insignificant effect. The largest change in N deposition is predicted at one veteran tree location, with a magnitude of change of 0.06 kgN/ha/yr, equivalent to 0.6% of the lower critical load (10 kgN/ha/yr).

Risk of Impacts

- 8.5.44. There are no predicted exceedances of the annual mean NO_x critical level (30µg/m³) at any of the designated habitats assessed in the DM and DS scenario. Additionally, no assessed designated habitats predicted to experience a magnitude of change that is above the 1% significance criterion (i.e. an change of more than 0.3 µg/m³).
- 8.5.45. All statutory designated habitats will be in exceedance of the relevant lower critical load (see **Table 8-9: Ecological Designations – Nitrogen Critical Loads and Current Loads (kgN/ha/yr)**) for N deposition in both the DM and DS scenarios. However, with the proposed development in operation, none of the assessed designated habitats are predicted to experience N deposition impacts of more than 1% of the relevant lower critical load.

8.5.46. Therefore, the predicted impact of the proposed development on nearby designated habitats equates to **no significant effect**.

Future Year: 2041

8.5.47. For both the Human Health and Designated Habitats assessment, the concentrations and depositions predicted for the Future Year (2041) scenario are lower than for the Opening Year (2026). This is due to the significant improvements in fuel and vehicle technology expected in the years following the implementation of the proposed development, as discussed in **sections 8.4.49 - 8.4.51 of this chapter**.

8.5.48. The predicted concentrations are well below the respective air quality objectives in both the DM and DS scenarios at all human health receptors and the magnitude of change between the scenarios equates to a *negligible* impact at all the assessment receptors. Similarly, the predicted impacts associated with N deposition and levels of NO_x at the assessed designated habitat sites are below the 1% significant criterion.

8.5.49. Given the results of the local air quality assessment and evaluation within the context of the joint EPUK and IAQM²⁴ guidance, the impact on local air quality in regard to the proposed development is of **negligible** significance and is adjudged to be **not significant** for the Human Health assessment. Additionally, the impact of the proposed development on nearby designated habitats is adjudged to be **not significant**.

8.5.50. A full breakdown of these results can be found in **Appendix 8.5 of Volume 3: Schedule of Dispersion Model Results**.

Damage Cost Calculation

8.5.51. As outlined in **Section 8.3 of this chapter**, the pollutant emission costs calculation aims to identify the environmental damage costs associated with the proposed development and determine the cost (monetary value) of mitigation that is envisaged to be spent on impact control measures.

8.5.52. The NWBC Air Quality & Planning SPD²⁵ recommends that the result of the damage cost calculation is totalled for a five-year period to enable mitigation implementation.

8.5.53. The additional trip rate derived for this assessment was 1,568 AADT, in line with the greatest predicted increase of traffic on the roads created as part of the proposed development. The greatest increase was used to ensure the most conservative approach was undertaken.

8.5.54. A percentage breakdown of LDV and HDV and associated average speeds for each vehicle class were also derived for use in the DEFRA EFT²⁸, based on the respective development-led traffic flow provided for the assessment. The corresponding annual link emissions for each pollutant and year of assessment have then been incorporated into the DEFRA Damage Cost Calculation sheet³¹ for NO_x and PM_{2.5}.

8.5.55. The damage costs calculation for the assessment considered emissions between 2026 (opening year) and 2030 (latest year for which EFT data is available) with 1,568 AADT applied as an additional trip rate for each year.

8.5.56. The inputs incorporated into the DEFRA EFT²⁸ for the Damage Cost Calculation are presented in **Table 8-10:**

Table 8-10 - Damage Cost Calculation – DEFRA EFT Inputs

For EFT Input	Value
Additional Trip Rate – AADT	1,568
Additional Trip Rate – HDV%	0.02
Average speed (kph)	33.9
Considered Link Length	10 km
Road Type	England - Urban (Not London)
Years of Assessment	2026 to 2030

8.5.57. The calculation incorporates the most recent DEFRA EFT²⁸ to estimate the change in pollutant emissions associated with the proposed development and the latest DEFRA Air Quality Appraisal: Damage Cost Guidance and toolkit calculation sheet³¹ for NO_x and PM_{2.5}.

8.5.58. **Table 8-11** presents the Air Quality Damage Cost Appraisal completed for this assessment:

Table 8-11 - Damage Cost Calculation - Appraisal

Pollutant	Low Sensitivity Present Value	Central Present Value	High Sensitivity Present Value
NO _x (Road Transport)	£4,149	£46,046	£176,453
PM _{2.5} (Road Transport)	£11,030	£51,183	£158,660
Total	£15,179	£97,229	£335,113

8.5.59. Based on the number of additional trip rates, the total damage cost associated with road transport is estimated to be approximately **£97,229**. This is based on the Central Present Value, as taken from the DEFRA Air Quality Appraisal: Damage Cost Guidance and toolkit calculation sheet³¹ for NO_x and PM_{2.5}. It is assumed the DEFRA Low Sensitivity and High Sensitivity cast factors are not applicable to the proposed development.

8.6 CUMULATIVE ASSESSMENT

CONSTRUCTION PHASE

8.6.1. The assessment of the impacts due to the generation and dispersion of dust during the construction stage has been completed using relevant assessment methodology contained within IAQM construction phase dust assessment guidance²³, whereby it has considered the potential risk of dust arising from construction activities that have the potential to result in dust nuisance / soiling and health effects at sensitive receptor locations within 350m of the proposed development.

8.6.2. Adverse cumulative impacts due to emissions of dust could occur where the construction phase of one or more committed development coincides with that of the proposed development. However, any such cumulative impacts would diminish with distance away from the proposed development footprint.

8.6.3. Planned residential and commercial developments in the vicinity have been reviewed. The vast majority of the assessed planned developments are either already under construction or are more than 350m from the construction phase dust study area (such as Local Plan allocation ref: H7) and so would not coincide with the construction programme for this development.

- 8.6.4. The IAQM construction phase dust assessment guidance²³ states that, ‘For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be ‘not significant’.
- 8.6.5. As the potential risk of dust impacts of a significant air quality effect at the considered sensitive receptor locations is adjudged to be not significant at the proposed development, as the Contractor will be committed to ensuring appropriate mitigation is applied throughout the construction stage, then the potential risk of dust impacts of the proposed development causing a significant cumulative effect is adjudged to be not significant.
- 8.6.6. Appropriate dust mitigation measures will be detailed within a Construction Environment Management Plan (CEMP) and will consider the requirement to minimise construction dust impacts, to ensure that the residual effect will remain as not significant.

OPERATIONAL PHASE

- 8.6.7. Any cumulative operational road vehicle exhaust effects arising from additional developments introduced both prior to the opening of the proposed development and between the development opening year and design / future year scenarios are assumed to be incorporated within the modelled traffic data provided by Bancroft Consulting. As such they have not been assessed individually but are included within the predicted annual mean concentrations reported in this assessment.

8.7 MITIGATION MEASURES

CONSTRUCTION PHASE

Fugitive Dust and Particulate Matter (PM₁₀) Emissions

- 8.7.1. Based on the assessment results, mitigation will be required during the construction phase. Recommended mitigation measures are given below, which should be included within the CEMP, which can be secured by planning condition.

General Communication

- A stakeholder communications plan that includes community engagement before work commences on site should be developed and implemented.
- The name and contact details of person(s) accountable for air quality and dust issues should be displayed on the site boundary. This may be the environment manager/engineer or the site manager. The head or regional office contact information should also be displayed.

General Dust Management

- A Dust Management Plan (DMP), which may include measures to control other emissions, in addition to the dust and PM10 mitigation measures given in this report, should be developed and implemented, and approved by the Local Authority.

Site Management

- All dust and air quality complaints should be recorded, and causes identified. Appropriate remedial action should be taken in a timely manner with a record kept of actions taken including of any additional measures put in-place to avoid reoccurrence.
- The complaints log should be made available to the local authority on request.

- Any exceptional incidents that cause dust and/or air emissions, either on- or off- site should be recorded, and then the action taken to resolve the situation recorded in the logbook.

Monitoring

- Daily on-site and off-site inspections should be undertaken, where receptors (including roads) are nearby to monitor dust. The inspection results should be recorded and made available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary.
- The frequency of site inspections should be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Preparing and Maintaining the Site

- Plan the site layout so that machinery and dust causing activities are located away from receptors, as far as is practicable.
- Where practicable, erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Where practicable, fully enclose site or specific operations where there is a high potential for dust production and the Site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover appropriately.
- Where practicable, cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicle/Machinery and Sustainable Travel

- Ensure all vehicle operators switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- A Construction Logistics Plan should be produced to manage the sustainable delivery of goods and materials.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

Measures Specific to Earthworks

- Stockpile surface areas should be minimised (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pick-up.
- Where practicable, windbreak netting/screening should be positioned around material stockpiles and vehicle loading/unloading areas, as well as exposed excavation and material handling operations, to provide a physical barrier between the Site and the surroundings.
- Where practicable, stockpiles of soils and materials should be located as far as possible from sensitive properties, taking account of the prevailing wind direction.
- During dry or windy weather, material stockpiles and exposed surfaces should be dampened down using a water spray to minimise the potential for wind pick-up.

Measures Specific to Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.
- All construction plant and equipment should be maintained in good working order and not left running when not in use.
- Avoid scabbling (roughening of concrete surfaces) if possible.

- 8.7.2. Detailed mitigation measures to control construction traffic should be discussed with the local authority to establish the most suitable access and haul routes for the site traffic. The most effective mitigation will be achieved by ensuring that construction traffic does not pass along sensitive roads (residential roads, congested roads, via unsuitable junctions, etc.) where possible, and that vehicles are kept clean (through the use of wheel washers, etc.) and sheeted when on public highways. Timing of large-scale vehicle movements to avoid peak hours on the local road network will also be beneficial.

OPERATIONAL PHASE

Road Vehicle Exhaust Emissions

- 8.7.3. The changes in pollutant concentrations attributable to traffic emissions associated with the operational phase of the proposed development (i.e. impacts on local air quality) are predicted to be of **negligible** significance and adjudged to be **not significant**. Future users of the proposed development will not be exposed to concentrations that exceed any of the relevant air quality objectives. However, the below measures would facilitate local air quality enhancement.
- A Travel Plan aiming to encourage occupants to adopt travel behaviour in favour of sustainable travel modes such as public transport, which would be of benefit to local air quality.
 - The provision of electric vehicle charging stations, with optional extra charging points available. An electric vehicle feasibility study could be used to determine the best place for electric vehicle charging stations for high density dwellings and on street parking EPUK/IAQM guidance²⁴ states

there should be *‘the provision of at least 1 Electric Vehicle (EV) “fast charge” point per 10 residential dwellings and/or 1000m² of commercial floorspace’*.

8.8 RESIDUAL EFFECTS

CONSTRUCTION PHASE

Fugitive Dust and Particulate Matter (PM₁₀) Emissions

- 8.8.1. The residual effects of dust and PM₁₀ generated by construction activities will be direct, temporary and short-term and of **negligible** significance following the implementation of mitigation measures, which is considered to be **not significant**.

Construction Led Traffic and NRMM

- 8.8.2. The residual effects of exhaust emissions generated by construction led traffic and from activities associated with NRMM will be direct, temporary and short-term and of **negligible** significance which is adjudged to be **not significant**.

OPERATIONAL PHASE

Road Vehicle Exhaust Emissions

- 8.8.3. The residual impacts of the proposed development on local air quality will be of **negligible** significance which is adjudged to be **not significant**.

9

LAND AND SOIL



9 LAND AND SOIL

9.1 INTRODUCTION

- 9.1.1. This chapter of the ES assesses the likely significant effects of the proposals in terms of agricultural land and soils.
- 9.1.2. This chapter describes: the planning policy context; the assessment methodology; the baseline conditions existing at the site and its surroundings; the likely significant effects of the proposals in respect of agricultural land and soils and effects on farm businesses; the avoidance and mitigation measures required to prevent, reduce or offset any significant adverse effects, and the likely significant effects after these mitigation measures have been employed. This chapter has been prepared by Kernon Countryside Consultants Ltd.
- 9.1.3. The scope of the assessment is largely focused on the site itself, although consideration has been given to adjacent land. In terms of the assessment of significance the land quality of the wider area has been considered.

KEY FINDINGS

- 9.1.4. The site has been the subject of a detailed Agricultural Land Classification (ALC) survey (**Appendix 9.1**) and found to comprise a mixture of land quality grades. The majority of the site is Grade 2, with a small area of Subgrade 3b. There is no significant adverse effect on farm businesses.
- 9.1.5. The loss of agricultural land cannot be mitigated. Therefore, there is a significant adverse effect as a result of the loss of land that is defined as “best and most versatile” (BMV) agricultural quality. In this area BMV land is widespread, and the significance of the effect must be considered in that wider context.

SCOPING AND CONSULTATION

- 9.1.6. No pre-application consultation has taken place. However, the assessment has been carried out in accordance with well-established methodologies and practice.

9.2 POLICY CONTEXT

- 9.2.1. Key legislation and planning policies of relevance to the development of agricultural land are summarised below and have been taken into account during the design of the proposals, so far as possible.

LEGISLATION

- 9.2.2. The Town and Country Planning (Development Management Procedure) (England) Order 2015 sets out the requirements for the consultation with Natural England where development involves agricultural land. The threshold is where development of agricultural land that is not in accordance with the provisions of a development plan will lead to the loss of 20 ha or more of the best and most versatile agricultural land. This sets a context for defining what is “**significant development**” in EIA terms.

NATIONAL PLANNING POLICY

- 9.2.3. The National Planning Policy Framework (2021) (the NPPF) Annex 2 defines the “*best and most versatile agricultural land*” (hereafter referred to as BMV agricultural land) as that falling within Grades 1, 2 and 3a of the Agricultural Land Classification³⁷ (MAFF, 1988).
- 9.2.4. Paragraph 174 of the NPPF states that “*planning policies and decisions should contribute to and enhance the natural and local environment*” by, *inter alia*, recognising “*the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land*”.
- 9.2.5. Paragraph 175 is set in the context of plan making. It is noted that plans should allocate land with the least environmental value. Footnote 58 states that “*where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality*”.
- 9.2.6. The Planning Practice Guidance sets out guidance in 8-001-20190721 that refers to the consultation thresholds with Natural England. Paragraph 8-002-20190721 notes the importance of soil as an essential natural capital asset and refers to Defra’s Code of Practice for the Sustainable Use of Soils on Construction Sites (2009).

LOCAL PLANNING POLICY

- 9.2.7. The site lies within North Warwickshire Borough Council’s jurisdiction.
- 9.2.8. The Local Plan was adopted on 29 September 2021.
- 9.2.9. Policy LP29 (Development Considerations), Part 13, identifies that the Council will safeguard and enhance land resources in the Borough and require development proposals to “*not degrade soil quality*”.

9.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

BASELINE METHDOLOGY

- 9.3.1. The methodology for the assessment of agricultural land quality involved an initial desk-top study followed by a detailed ALC field survey (**Appendix 9.1**).

The assessment of the effect on farm businesses involved a telephone discussion and over-the-fence field survey.

EVALUATION OF LAND AND SOILS BASELINE

- 9.3.2. The detailed Agricultural Land Classification has been carried out in accordance with the MAFF guidelines “Agricultural Land Classification of England and Wales: revised guidelines and criteria for

³⁷ Agricultural Land Classification: revised guidelines and criteria for grading the quality of agricultural land, MAFF, October 1988

grading the quality of agricultural land”, MAFF 1988. This involved field survey including taking auger samples at a density of one per hectare.

9.3.3. Further details are set out in the detailed Agricultural Land Classification (ALC) survey at **Appendix 9.1**.

ASSESSMENT METHODOLOGY FOR EFFECTS

9.3.4. The assessment of the effects on agricultural land and farm businesses has been carried out in three stages. Firstly, the magnitude of the potential impacts has been considered. Secondly, the importance/sensitivity of the receptor has been considered and, thirdly, the significance of effects has been determined by the interaction of magnitude and sensitivity. The effects have been determined by the thresholds set out in **Tables 9.1 to 9.3** below.

Table 9-1 - Methodology for Determining Magnitude of Effect

Magnitude of Effect	Definition	
	Effects on Agricultural Land (soils)	Effects on Farm Businesses (agricultural businesses)
High	The proposed development would directly lead to the loss of over 50 hectares of “ best and most versatile agricultural land ” (Grades 1, 2 and 3a) soil resources.	The impact of the development would render a full-time agricultural business non-viable.
Medium	The proposed development would directly lead to the loss of between 20 and 50 hectares of “best and most versatile agricultural land” (Grades 1, 2 and 3a) soil resources.	The impact of the development would require significant changes in the day-to-day management of a full-time agricultural business, or closure of a part-time agricultural business. Loss of buildings or impacts on drainage or water supplies affecting the potential for at least 5 ha of adjacent land to be farmed fully.
Low	The proposed development would directly lead to the loss of less than 20 hectares of “best and most versatile agricultural land” (Grades 1, 2 and 3a) soil resources or would directly lead to the loss of 5 ha or more of poorer quality agricultural land (Grades 3b, 4 or 5) and soil resources.	Land take would require only minor changes in the day-to-day management / structure of a full-time agricultural business or land take would have a significant effect on a part-time business. Minor effects, direct or indirect, on surrounding land beyond the boundaries of the site.
Negligible	The proposed development would directly lead to the loss of less than 5 hectares of poorer quality agricultural land and soil resources.	Land take would require only negligible changes in the day-to-day management of a full-time agricultural business or land take would require only minor changes to a part-time farm business.
No Impact	No loss of agricultural land or soil resources.	No impact on farm businesses.

9.3.5. The methodology for determining the sensitivity of the receptors is set out in **Table 9.2** below. Two receptors have been identified: agricultural land and farm businesses. The sensitivity of these receptors is defined by the quality of the agricultural land and the scale of the farm business. BMV agricultural land is of national importance and accordingly of high significance, whilst poorer quality agricultural land (non-BMV) and farm businesses are of local importance and accordingly of medium or low sensitivity.

Table 9-2 - Methodology for Determining Sensitivity

Sensitivity	Receptors
Very High	No agricultural resources fall within this category.
High	Land resources are matters of potentially national importance. National planning policy towards the development and protection of agricultural land is contained in paragraphs 174 and 175 of the NPPF. The effect on land resources is a combination of the quantum and quality of agricultural land affected, relative to both the national resource and the relative availability of land of that quality locally. Land resources that are of the best and most versatile quality should therefore be classified as being of high environmental value (sensitivity).
Medium	Land that is of poorer quality, Grades 3b, 4 and 5, is of lower sensitivity and is afforded no special protection in the NPPF. It is nevertheless a finite resource of local importance and so is regarded as of moderate sensitivity. Full-time farm businesses are of medium sensitivity, as the way that farms are operated will vary over time according to ownership, security of tenure and local and international economic factors. Farm businesses are tolerant of some change without detriment to their character. Farms outwith the site boundary, if affected, are considered to be of medium sensitivity.
Low	Part-time farm businesses are of low sensitivity. The way that farms are operated will vary over time according to ownership, security of tenure and local and international economic factors. Farm businesses are tolerant of some change without detriment to their character.

9.3.6. The significance of the effects of the development will then be determined by the interaction of the magnitude of the impact and the sensitivity of the receptor, as set out in the matrix at **Table 9.3**.

Table 9.3 Methodology for Determining Sensitivity

		Sensitivity/Importance of Receptor			
		Very high	High	Medium	Low
Magnitude of Impact	High	N/A	Major (Substantial) Adverse/Beneficial	Moderate Adverse/Beneficial	Minor Adverse/Beneficial
	Medium	N/A	Moderate Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial
	Low	N/A	Minor Adverse/Beneficial	Minor Adverse/Beneficial	Negligible Adverse/Beneficial

		Sensitivity/Importance of Receptor			
		Very high	High	Medium	Low
					Beneficial
	Negligible	N/A	Minor Adverse/Beneficial	Negligible	Negligible
	No Impact	No impact			

9.4 BASELINE CONDITIONS

AGRICULTURAL LAND QUALITY

- 9.4.1. The Agricultural Land Classification (ALC) system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The ALC system divides agricultural land into five grades. Grade 1 of the ALC is described as being of excellent quality and Grade 5, at the other end of the scale, is described as being of very poor quality. The current guidelines and criteria for ALC were published by MAFF in 1988.
- 9.4.2. The ALC survey of the site was carried out on 25th and 26th November 2020. 31 sites were examined over the site and graded in accordance with the revised methodology. Two soil pits were dug to better describe profiles, and three samples were sent for particle size analysis to validate the hand-texturing results.
- 9.4.3. The factors affecting the ALC are set out in the analysis in **Appendix 9.1**. There are no climatic, gradient or local micro-relief limitations to the quality of land.
- 9.4.4. Land quality across the majority of the site (29 ha) is limited by a combination of soil wetness and soil droughtiness. Most of the site falls into ALC Grade 2.
- 9.4.5. Part of the site, in the south-east corner, has slowly permeable soils in wetness class IV where the grade is limited by wetness to ALC sub-grade 3b (2 ha). Part (1 ha) is non-agricultural.
- 9.4.6. The details ALC survey is contained at **Appendix 9.1**, and the distribution of grades is provided on **Plan KCC2697/02** at the back of that appendix.
- 9.4.7. The results for the site are shown below.

Table 9-3 - ALC Results

ALC Grade	Description	Area (ha)	Area (%)
2	Very good	29	91
3b	Moderate	2	6
Non-Ag	Non-agricultural	1	3
Total		32	100

9.5 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

9.5.1. This section considers the likely direct and indirect effects on agricultural land, soil resources and farm businesses, and whether any effects are permanent or temporary, positive or adverse.

CONSTRUCTION

9.5.2. The effect on soil and agricultural land resources commences during the construction phase, as soon as the land has ceased to be used for agricultural purposes and the stripping of soil begins.

9.5.3. These effects are usually permanent. Accordingly, effects that take place at the construction phase typically continue throughout the operational phase, as they are permanent. These effects are also usually adverse.

9.5.4. The proposed development involves the development of approximately 29 ha of Grade 2 “good quality” agricultural land. The soil resources will be stripped for reuse in landscaping wherever possible, but the loss to agricultural use, and consequently the loss of agricultural land, is a permanent and adverse effect.

9.5.5. The impact of the loss of approximately 29 ha of Best and Most Versatile agricultural land constitutes:

- An effect of medium magnitude, being a loss of between 20 ha and 50 ha;
- The receptor is one of high sensitivity;
- Which leads to a Moderate Adverse impact, which is significant in EIA terms.

9.5.6. The adverse effects on agricultural businesses also commences at the start of the construction phase. In this case the effect is limited. The land is farmed by the farming arm of the Applicant’s business but farming operations are carried out by contractors. There is no machinery owned by or farm buildings occupied in connection with the farming use therefore.

9.5.7. The business is therefore considered to be part-time.

9.5.8. The impact is therefore assessed as follows:

- The magnitude of impact is negligible;
- The affected business is of low sensitivity;
- An adverse impact of negligible magnitude on an interest of low sensitivity is overall considered to be an adverse impact of negligible adverse sensitivity. This is not significant in EIA terms.

- 9.5.9. The soils resources will not be lost. It is proposed to use these within landscaping and visual mitigation measures. Furthermore, it is proposed to have topsoil and subsoil cut and fill balance across the site, through the proposed earthworks to facilitate the development, thereby no soil will be removed from site.

OPERATION

- 9.5.10. The effects on soil and land quality, and the direct and permanent effects on farm businesses, commenced at the construction phase. Being permanent effects, they continue throughout the operational phase.
- 9.5.11. The proposed development is for a mixed employment development and an overnight lorry parking facility, and associated development. As a consequence, there should be no reason why users of the facility might venture wider afield and cause trespass or other adverse effects on surrounding farmland and farm businesses.

9.6 CUMULATIVE EFFECTS

- 9.6.1. Any adverse effects on agricultural land and occupying farm businesses are specific to, and limited to, the proposed site. Whilst other development may be proposed or underway in the wider area affecting agricultural land, those effects are not directly related to the agricultural effects of the proposed development.
- 9.6.2. Accordingly, there is no consequential cumulative impact arising from other development proposals that needs to be considered in this ES chapter.
- 9.6.3. It is noted that the Applicant also owns agricultural land allocated in the Local Plan (ref: E2 land to the west of Birch Coppice, Dordon), and that were both to be developed there would be a greater impact, but this would still be a negligible impact cumulatively.

9.7 MITIGATION MEASURES

CONSTRUCTION

- 9.7.1. There are no effective measures to mitigate the loss of agricultural land as it is not possible to effectively translocate best and most versatile agricultural land to another location, nor elevate land quality elsewhere to compensate.
- 9.7.2. However, soils have a number of important functions beyond the support and growth of plants. These include improved drainage and maintaining solution pathways, supporting ecosystems and providing green areas for communities to use and enjoy. In order to sustain these basic functions, it is important that appropriate consideration is given to the soil resource on any development site, as if it is not managed carefully during construction and ground preparation, these functions can be lost.
- 9.7.3. “*The Construction Code of Practice for the Sustainable Use of Soils on Construction Sites*” (Defra, 2009) is a practical guide to assist managers of construction sites to protect the soil resources that they work with. The Code is not legally binding but, by using it, the soil resource at a site may be enhanced and wider environmental benefits may be achieved. For example, careful movement of soil during ground preparation, including the timing of land work and the storage of soils for after use, will provide materials in better condition for landscaping and will also help natural site drainage.

- 9.7.4. There are no effective measures to mitigate the loss of farmland for the occupying farm business, although the effect is one of low magnitude and negligible significance.

OPERATION

- 9.7.5. Effects on agricultural land and soils, and farm businesses, occur at the construction phase. There are no additional effects during the operational phase.

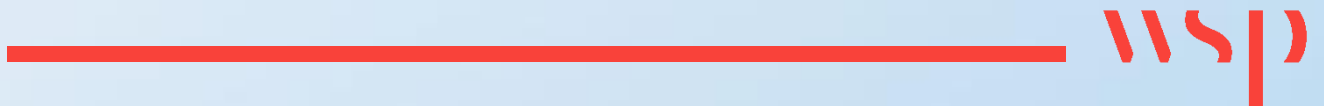
9.8 RESIDUAL EFFECTS

LIKELY SIGNIFICANT EFFECTS

- 9.8.1. The proposed development will result in the permanent loss of 29 ha of Grade 2 agricultural land. This is a moderate adverse significance effect. The area around the junction is all predicted to be mostly of BMV quality. In the local context this loss of good quality land is of reduced significance as a consequence.
- 9.8.2. There is a small localised effect on the farming business and the contractors that carry out the farming operations. The overall effect is a **negligible adverse effect**.

10

LANDSCAPE AND VISUAL IMPACT



10 LANDSCAPE AND VISUAL IMPACT

10.1 INTRODUCTION

- 10.1.1. The purpose of this chapter and associated appendices and figures is to identify the potential landscape and visual effects of the proposed development.
- 10.1.2. Landscape, as defined in the European Landscape Convention, is “*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*”, (Council of Europe, 2000). Landscape does not apply only to special or designated places, nor is it limited to countryside. Visual effects are the effects of change and development on the views available to people and their visual amenity. Visual receptors are the people whose views may be affected by the proposed development.
- 10.1.3. The findings of this assessment have been based upon the EIA Location Plan (**Figure 1.1 of Volume 4**) and the Parameters Plan (**Figure 3.1 of Volume 4**) which accompany the application.

METHODOLOGY

- 10.1.4. The LVIA has been carried out by experienced Chartered Landscape Architects at SLR Consulting. It identifies and assesses the potential effects of the proposed development on the landscape and visual resource of the study area and will focus on potentially significant effects. The LVIA will also outline the approach taken to the design of the proposed development, as well as mitigation measures that would be implemented, to prevent, reduce or offset potential adverse landscape and visual effects.
- 10.1.5. An assessment of the potential effects of the proposals on the Strategic Gap (Local Plan Policy LP4) has been undertaken as part of the LVIA because the function of the gap is strongly linked with the landscape and visual attributes of the locality.

STUDY AREA

- 10.1.6. The study area is illustrated on drawings **LAJ-1 to LAJ-4 at Appendix 10.1 of Volume 3**.
- 10.1.7. The study area was identified through desk-top analysis and computer modelling of theoretical visibility which was refined by field survey.

10.2 POLICY CONTEXT

National Policy: National Planning Policy Framework (NPPF)

- 10.2.1. Paragraph 11 sets out the fundamental principle of this document: that there is a presumption in favour of sustainable development. All development that is in accordance with the development plan should be approved “*without delay*” and that “*where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date*” permission should be granted for development “*unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the Framework taken as a whole.*”
- 10.2.2. In relation to landscape, the NPPF defines sustainability as including the protection and enhancement of the “*natural, built and historic environment*” (paragraph 8).

- 10.2.3. Paragraph 100 relates to rights of way and access, stating that these should be “*protected and enhanced*”. It is noted that better facilities should be provided for users of rights of way, for example by “*adding links to existing rights of way including National Trails*”.
- 10.2.4. Paragraph 130 of the NPPF indicates that decisions should ensure that developments “*....are sympathetic to local character and history, including the surrounding built environment and landscape setting...*”
- 10.2.5. Paragraph 131 states that “*Trees make an important contribution to the character and quality of urban environments*” and notes that “*Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible*”.
- 10.2.6. Paragraph 174 of the NPPF states that the planning system, “*should contribute to and enhance the natural and local environment by [inter alia] ...protecting and enhancing valued landscapes*” and by “*recognising the intrinsic character and beauty of the countryside*”. Paragraph 175 states that the planning system should “*distinguish between the hierarchy of international, national and locally designated sites*”.

North Warwickshire Local Plan 2021

- 10.2.7. The North Warwickshire Local Plan was adopted in September 2021.
- 10.2.8. The following policies have relevance to the site:
- **Policy LP4 – Strategic Gap** which states that: “*In order to maintain the separate identity of Tamworth and Polesworth with Dordon, a Strategic Gap is identified on the Policies Map in order to prevent their coalescence. Development proposals will not be permitted where they significantly adversely affect the distinctive, separate characters of Tamworth and Polesworth with Dordon. In assessing whether or not that would occur, consideration will be given to any effects in terms of the physical and visual separation between those settlements*”. The supporting text which accompanies the policy states “*The purpose of policy LP4 is to retain and respect the separate identities and characters of the settlements of Tamworth and Polesworth with Dordon to avoid their coalescence. The Strategic Gap seeks to retain and maintain the sense of space, place and separation between these settlements so that when travelling through the strategic gap (by all modes of transport), a traveller should have a clear sense of having left the first settlement, having travelled through an undeveloped area and then entering the second settlement*”.
 - **LP14 – Landscape** states that “*development should look to conserve, enhance and where appropriate, restore landscape character as well as promote a resilient, functional landscape able to adapt to climate change. Specific landscape, geo-diversity, wildlife and historic features which contribute to local character will be protected and enhanced as appropriate*”;
 - **LP17 – Green Infrastructure** states that “*Development proposals must, where appropriate, demonstrate how they contribute to maintaining and enhancing a comprehensive and strategically planned Green Infrastructure network*”.
 - **LP30 - Built Form** provides a series of general principals which include “*All development in terms of its layout, form and density should respect and reflect the existing pattern, character and appearance of its setting*”.

10.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

- 10.3.1. The assessment has been carried out by an experienced Chartered Landscape Architect in accordance with the Guidelines for Landscape and Visual Impact Assessment (3rd Edition, 2013, also known as GLVIA3, produced by the Landscape Institute and Institute of Environmental Management and Assessment). The full methodology is provided in **Appendix 10.2 of Volume 3**.
- 10.3.2. The methodology used to assess the gap between settlements draws on the principles outlined in the Inspector's report for the Eastleigh Local Plan Inquiry in 1998, which were then reproduced within an ODPM (now DCLG) report on Strategic Gaps and Green Wedges ("Strategic Gap and Green Wedge Policies in Structure Plans, Main Report", ODPM, 2001). These criteria (the "Eastleigh Criteria") have been applied on numerous Applications and Appeals to determine the effectiveness of an existing strategic gap or wedge.
- 10.3.3. The assessment has been based upon a desk top assessment of relevant plans, guidance and character assessments, as well as three site assessments and 3D modelling of design concepts to optimise the design in relation to potential landscape and visual effects.
- 10.3.4. Landscape, as defined in the European Landscape Convention, is *"an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors"*, (Council of Europe, 2000). Landscape does not apply only to special or designated places, nor is it limited to countryside. Visual effects are the effects of change and development on the views available to people and their visual amenity. Visual receptors are the people whose views may be affected by the proposed development.
- 10.3.5. All judgements have been discussed and agreed by two Chartered Landscape Architects in line with guidance provided in GLVIA3.

10.4 BASELINE CONDITIONS

LANDSCAPE DESIGNATIONS

- 10.4.1. The site is not within any national designations for valued landscapes, such as AONBs or National Parks.
- 10.4.2. Other landscape-related designations in the locality are summarised below and are illustrated on **Drawing LAJ-1 (Appendix 10.1 of Volume 3)**.
- There are two areas of open space to the east of the site on the edge of Dordon. The first of these (Kitwood Avenue Recreation Ground) forms part of the adopted Local Plan. The second, which adjoins the A5, is an area of open space transfer location, site allocation OS1 in the North Warwickshire Local Plan;
 - A public bridleway (AE45) extends along part of the eastern boundary and within the eastern edge of the site. A public footpath (AE46) extends from public bridleway AE45 to the east and turns south connecting with the A5. It was noted on site that the public are using an existing track, which follows a similar route, as an alternative to the footpath. Public footpath AE48 is located to the east of the site. Public footpaths AE52 and AE55 extend in a southerly direction from the A5 to the south of the site.
 - A number of Grade II and II* Listed buildings are present to the north within the Polesworth Conservation area at a distance of approximately 1.2km from the edge of the Conservation Area to the site. Four Grade II Listed buildings are present within Freasley to the south at a distance of

approximately 830m. The Grade II Listed Hall End Farm is present to the south-east of the site at a distance of approximately 780m; and

- The site is also located within an area of Strategic Gap as defined within the Local Plan (Policy LP4).

LANDSCAPE CHARACTER

Existing Landscape Character Assessments

10.4.3. Drawings LAJ-2A and LAJ-2B (Appendix 10.1 of Volume 3) illustrate published sources of Landscape Character within the study area which are detailed as follows:

National Landscape Character

10.4.4. At a national scale the site is included within Natural England's National Character Area (NCA) 97: Arden. NCA97 is described as "*well-wooded farmland landscape with rolling landform*". It is noted that the NCA has a "*complex and contrasting settlement pattern with some densely populated where traditional settlements have amalgamated to form the major West Midlands conurbation while some settlements remain distinct and relatively well dispersed*". The north-eastern part of the NCA is described as an "*industrial area based around former Warwickshire coalfield, with distinctive colliery settlements*". The assessment notes transport infrastructure as a key characteristic "*the M42, M40, M6 and M5 are major transport corridors that sit within the landscape of this NCA*". Landscape opportunities noted which are of relevance to the site include the following:

- "*Conserve, enhance and restore the area's ancient landscape pattern of field boundaries, historic (including farm) buildings, moated sites, parkland and pasture and reinforce its well wooded character.*"
- "*Protect and manage woodlands particularly ancient woodlands and wood pasture to maintain the character of Arden.*"
- "*Manage and restore hedgerows especially in the north-eastern part of the area (enclosure patterns) and restore parkland, ancient trees and stream side trees plus manage and replace in-field trees and hedgerow trees.*"
- "*Create new green infrastructure with associated habitat creation and new public access on former mining sites and close to urban populations in the West Midlands Green Belt.*"

Warwickshire Landscape Guidelines (November 1993)

10.4.5. At a county scale the Warwickshire Landscape Guidelines (November 1993) classifies the site as part of the Arden Landscape Character Area (LCA) within Landscape Character Type (LCT) Wooded Estatelands. LCT Wooded Estatelands is described as "*A well wooded estate landscape characterised by a large scale rolling topography and prominent hilltop woodlands*" with the following key characteristics:

- "*A large rolling topography with occasional steep scarp slopes.*"
- "*Large woodlands, often associated with rising ground.*"
- "*Mature hedgerow and roadside oaks.*"
- "*A semi-regular pattern of medium to large sized fields.*"
- "*A varied settlement pattern of small villages and scattered farmsteads*".

North Warwickshire Landscape Character Assessment (August 2010)

10.4.6. At a district level the North Warwickshire Landscape Character Assessment (August 2010) classifies the site as part of LCA 5 Tamworth Fringe Uplands. The following key characteristics have relevance to the site:

- *“Gently undulating indistinct landform.*
- *Predominantly open arable land with little tree cover.*
- *Fragmented landscape with a complex mix of agricultural, industrial and urban fringe land uses.*
- *Heavily influenced by adjacent settlement edges of Tamworth and Dordon and by large scale modern industry at Kingsbury, and in the vicinity of the M42 motorway junction.*
- *Unifying presence of the M42 motorway, which passes through within a planted cutting.*
- *Network of busy roads in and around Tamworth.*
- *Generally large, open arable fields between urban land uses with no or low trimmed hedges and few hedgerow trees.*
- *Former mining activity has created several large spoil tips, now reclaimed but remain sparsely vegetated, the large tip south of the M42 junction 10 is a significant visual detractor.*
- *Open internal views contained within wider landscape by peripheral settlement, woodland and landform, although there are longer views across the Tame Valley from the western edge of the area.”*

The Landscape of the Site and its Context

10.4.7. GLVIA3 recommends that a landscape character assessment should be carried out as part of the baseline study (paragraph 5.4). This should consider:

10.4.8. The elements that make up the landscape (physical, land cover and the influence of human activity)

- Aesthetic and perceptual aspects
- The overall character of the area

10.4.9. An assessment of the landscape baseline is set out in the following paragraphs.

Individual Elements and Features

10.4.10. The site is adjacent to J10 of the M42, with the M42 forming the western boundary of the site and the A5 dual carriageway, extending from J10, along the southern boundary of the site. Existing large-scale commercial development is present to both the south and the west of the site along these two routes.

10.4.11. The edge of Tamworth is located immediately to the west of the M42 and the settlement of Birchmoor is present to the north. The settlement of Dordon / Polesworth is present beyond arable fields to the east.

10.4.12. The site adjoins existing large-scale commercial development and infrastructure, forming the fourth, commercial quadrant at the motorway junction. Large-scale commercial development is already characteristic of this part of the landscape and the edge of Tamworth.

10.4.13. The topography of the site gently rises towards the north with the highest point of the site located along the edge of the settlement of Birchmoor. Land rises to the north and east up to an elevation of between approximately 110 and 115m AOD. Similarly land to the south of the site rises up to an elevation of approximately 110m and a substantial spoil heap associated with Birch Coppice Colliery

rises above the natural landform. Land to the west of the site and the M42 undulates between approximately 95 and 100m AOD.

- 10.4.14. The site is formed by a single, large-scale, irregular, arable field which forms part of a series of arable fields located between settlements. Off-site areas to the east of the site, extending to the prominent settlement edge of Dordon, would be included within application as part of the landscape improvement strategy.
- 10.4.15. Historic field boundaries, which would have sub-divided fields within the site and off-site area, have been lost. Hedgerow boundaries to the north, south and west are largely intact and in good condition as are woodland corner copses.
- 10.4.16. Whilst the site and off-site areas are arable fields, large-scale commercial development is prominent to the south and the rooflines of large-scale commercial development are visible above vegetation to the west. The settlement edge of Dordon is prominent, on elevated ground to the east and construction and buildings influence the site to the north-east on elevated ground within the Polesworth School grounds.

Aesthetic and Perceptual Aspects

- 10.4.17. The site and associated off-site areas are large-scale and open with a sense of enclosure provided by large-scale commercial development to the south and west and the prominent, elevated settlement edge to the east. The site is simple in form and colour but is influenced by the diversity of road infrastructure, and large-scale commercial development to the south and west, and by varied residential development along the settlement edge to the east. The site is largely still but strongly influenced peripherally by noise and movement associated with the A5 dual-carriageway and by noise associated with the M42.
- 10.4.18. A review of the interactive “England’s Light Pollution and Dark Skies” map provided by the CPRE has been undertaken to understand baseline lighting levels within and around the site. These maps indicate that the baseline level of light across the site varies between >32 NanoWatts/cm²/sr (the brightest level of lighting) in the south-western part of the site reducing to 8-16 NanoWatts/cm²/sr (3rd brightest band) at the north-eastern part of the site. This indicates that the site is already strongly influenced by light from adjacent settlements and infrastructure.

Overall Character

- 10.4.19. Field survey confirmed that the landscape within the site exhibits many of the key characteristics described for LCA 5 Tamworth Fringe Uplands within the North Warwickshire Landscape Character Assessment (August 2010).

The Changing Landscape

- 10.4.20. For the purposes of this assessment it has been assumed that the site would continue in its current use in the absence of the proposed development, but employment allocations would be built out and ongoing construction of large-scale commercial buildings to the south would continue to intensify increasing the visual influence of large scale employment uses on the land between Dordon and Tamworth. Historically, this area has become increasingly built up with the development of Relay Park and the motorway services to the west and commercial warehouses to the south and south-west of the site. Commercial development associated with the edge of Tamworth has already breached the M42 and it is expected that this trend would continue in the future. In addition, the route of HS2 extends to the west of the site which would further urbanise the area.

Landscape Receptors

10.4.21. The main landscape receptors which are likely to be affected by the development include the following individual elements and features:

- Mixed, native boundary hedgerows and woodland copses within and around the site;
- A single large-scale, irregular, arable field;
- Gently rising landform; and
- Influence of large-scale commercial buildings and prominent settlement edge.

10.4.22. As well as the following aesthetic and perceptual aspects:

- Large scale fields with a moderate sense of enclosure provided by large-scale commercial buildings and a prominent, elevated settlement edge;
- Generally simple forms and colours with diversity and complexity provided by road infrastructure, large-scale commercial buildings and the settlement edge;
- Largely still, but strongly influenced by peripheral road noise and movement; and
- Affected by lighting from adjacent infrastructure and commercial uses.

10.4.23. The overall character receptor would be the localised area of LCA 5 Tamworth Fringe Uplands described within the North Warwickshire Landscape Character Assessment (August 2010). The localised area includes land to the south up to the disused railway; land to the north up to the settlement edge of Dordon / Polesworth; land to the west up to the B5000 and land to the east up to the edge of the character area and Tamworth.

VISUAL BASELINE

Introduction

10.4.24. The following visual assessment is based upon desk top review, computer modelling and a site-based assessment undertaken in clear conditions in winter by an experienced Landscape Architect.

10.4.25. Overall visibility has been determined by computer-generated Zones of Theoretical Visibility (ZTV) and then by assessment on site. The methodology for producing the ZTV is set out in **Appendix 10.2 of Volume 3**. The ZTV for the proposed development, with semi-mature mitigation planting, is shown on **Drawing LAJ-3 (Appendix 10.1 of Volume 3)**.

Overall Visibility

10.4.26. As has been noted, the visibility of the proposed development has been determined with the aid of specialist software, and then checked by site assessment.

10.4.27. The levels for the site were taken from Ordnance Survey Terrain 5 data. Existing buildings and vegetation were taken from Ordnance Survey Vector Map Local 1:10,000 and where data was missing vertical elements such as buildings, tree belts and woodland blocks were manually digitised. No existing structural vegetation or buildings have been modelled outside of the five kilometre zone. Assumed heights for features within the landscape are illustrated on the ZTV (**Drawing LAJ-3 of Appendix 10.1 of Volume 3**). It has been assumed that the proposed mitigation planting has reached semi-maturity (Year 15); proposed trees have been modelled at an estimated height of 10m. Existing trees have been modelled at an estimated height of 12m and hedgerows have been modelled at an estimated height of 2m. Existing large-scale commercial buildings have been modelled at a height of 10m and existing residential properties have been modelled at a height of 9m.

10.4.28. **Drawing LAJ-3** shows that the greatest degrees of theoretical visibility (that is over 1 degree of vertical visibility) would be largely contained within the site by existing trees and proposed earth mounds with woodland planting. Theoretical visibility of between 0.25 and 1 degree visible vertical angle would be present in the off-site area to the east but would be contained by a combination of the reinstatement of historic field boundary hedgerows and proposed planting within the proposed parkland which extends along the eastern edge of the off-site area. Filtered visibility would be possible on elevated ground to the north-east and towards the edge of Polesworth within the Polesworth school grounds. An area of theoretical visibility, between 1 and 3 degrees visible vertical angle spills out from the proposed access point south of the site across the A5. It is noted that a large part of this area is allocated for future large-scale employment development and in the changing landscape potential visibility would be screened by future built form. Smaller areas of theoretical visibility are present to the northwest and south west (west of the M42) where land rises up to an elevation of approximately 105m AOD. Visibility is similarly present around the motorway services area and the split level junction of the A5 and M42.

Potential Visual Receptors

10.4.29. Potential viewpoints are identified on **Drawing LAJ-4 (Appendix 10.1 of Volume 3)** and these views illustrate the visual baseline which will include consideration of the following receptors:

- Residential receptors: the views of residents on the edge of Birchmoor, Polesworth, Dordon and Freasley;
- Public Rights of Way: the views of walkers on public rights of way including AE45, AE46, AE48, AE52 and AE55;
- Vehicular Users: the views of vehicular users along Birchmoor Road, the M42 and the A5;
- Open Space: the view of recreational areas of open space including Kitwood Avenue Recreation Ground, Site Allocation OS1 and the services.

Residential Receptors

10.4.30. There are approximately twenty-four semi-detached, 2 storey, properties along Kitwood Avenue to the east with the potential to experience views of the proposed development. There are approximately six, semi-detached, 2 storey properties along Barn Close to the east with the potential to experience views. There are approximately three, detached and semi-detached, 1 storey properties along Ashlea to the east with the potential to experience views. There are approximately four, detached, 2 storey properties along Browns Lane to the east with the potential to experience views. There are approximately five, semi-detached, 2 storey properties along Quarry Close to the east with the potential to experience views.

10.4.31. There are approximately seven, detached and semi-detached, 2 storey properties along the A5 to the east with the potential to experience views.

10.4.32. There are approximately twenty-nine, detached and semi-detached, 1 storey properties along Birch Grove to the north with the potential to experience views.

Walkers, Cyclists and riders on PRowS

- The PRow with the greatest potential for views are the following:
- Bridleway AE45 which extends along part of the eastern boundary and within the eastern edge of the site;

- Footpath AE46 which extends from public bridleway AE45 to the east and turns south connecting with the A5;
- Footpath AE48 which is located to the east of the site; and
- Footpaths AE52 and AE55 which extend in a southerly direction from the A5 to the south of the site

10.4.33. All other footpaths and bridleways in the vicinity of the site were visited and were found to have no views of the site as a result of existing hedgerows and woodland blocks and the existing settlement.

Travellers on Roads

10.4.34. The A5 dual-carriageway forms the southern boundary of the site. Access would be taken from the A5. The M42 forms the western boundary of the site. Views may be available from Cockspur Street, Green Lane and Birchmoor Road to the north.

Users of Areas of Open Space

10.4.35. There are two areas of open space to the east of the site on the edge of Dordon with the potential for views. The first of these (Kitwood Avenue Recreation Ground) forms part of the Local Plan. The second (Site Allocation OS1), which adjoins the A5 is proposed as an Open Space Transfer Location in the Local Plan.

Representative Viewpoints

10.4.36. Twenty-one viewpoint locations were identified on site, in publicly accessible locations, following a desktop review of baseline data to illustrate the range of views available and in discussion with an NWBC planning officer. Each viewpoint location has been visited, photographed and assessed against the masterplan. Modelling was undertaken to understand how the design of the proposed development might be adjusted to reduce potential impacts from key viewpoints. The location of all viewpoints is illustrated on **drawing LAJ-4 (Appendix 10.1 of Volume 3)**. For each of the viewpoints, photographs of the existing views have been included (see **drawings LAJ-5 to LAJ-48, Appendix 10.3 of Volume 3**).

10.5 IDENTIFICATION AND VALUATION OF KEY IMPACTS (CONSTRUCTION AND OPERATIONAL)

ASSESSMENT OF POTENTIAL LANDSCAPE EFFECTS

Sensitivity of Landscape Receptors

10.5.1. In accordance with GLVIA3 the sensitivity of landscape receptors is determined by combining their value with their susceptibility to the type of development proposed.

Value of the Landscape

10.5.2. In determining the value of landscapes, it is helpful to start with landscape and landscape-related designations. In this context it is important to note that neither the Site nor its immediate vicinity is included within a statutory or non-statutory landscape designation.

10.5.3. GLVIA3 states that the value of undesignated sites should also be considered, and Box 5.1 provides a helpful guide for assessing these sites.

10.5.4. Using these criteria (see **Table 10.14 in Appendix 10.2 of Volume 3**) it has been concluded that the value of the site and its immediate context is of Community importance overall with an elevated

value for the PRoW: whilst the site's open, agricultural, character may be appreciated by existing residents and walkers along PRoW, its rarity, representativeness and associations are of no more than low significance. The scenic quality on the local area is already reduced by surrounding infrastructure and employment uses. The site has no demonstrable physical attributes that elevate this landscape above an ordinary landscape.

Susceptibility of Landscape Receptors to the Proposed Development

- 10.5.5. The susceptibility of the landscape receptors is assessed within **Table 10.15, Appendix 10.2 (Volume 3)**.
- 10.5.6. The single arable field and gently rising landform was assessed as having a Medium susceptibility to change with susceptibility reduced by the strong influence of the prominent settlement edge and large-scale commercial development present to the south and west.
- 10.5.7. Other landscape receptors such as existing vegetation, the large-scale fields, sense of simplicity and stillness and lighting were assessed as having a low susceptibility to change.
- 10.5.8. In relation to overall character, it was assessed that the localised area of LCA 5 Tamworth Fringe Uplands Landscape Character Area (defined in paragraph 10.4.22) is predominantly a mixed, fragmented landscape heavily influenced by the adjacent settlement edge and existing large-scale commercial development which is characteristic of the locality and which consequently reduces its susceptibility to change.

Overall Sensitivity of Landscape Receptors

- 10.5.9. The overall sensitivity of landscape receptors is assessed in **Table 10.15 of Appendix 10.2 (Volume 3)**.
- 10.5.10. When value is combined with susceptibility, the landscape receptors generally have a sensitivity of low or medium/low to the proposed development.
- 10.5.11. The localised area of LCA 5 Tamworth Fringe Uplands (defined in paragraph 10.4.22) is of Medium / Low sensitivity to the proposed development as although it is of community value when assessed on the GLVIA3 Box 5.1 criteria, large-scale commercial development and the prominent settlement edge is already characteristic of the area.

Magnitude of Landscape Change

- 10.5.12. In accordance with GLVIA3 potential changes to the individual landscape receptors have been assessed in relation to (see also **Table 10.16 in Appendix 10.2 of Volume 3**):
- The Size and Scale of Change;
 - The Geographical Extent of Change; and
 - The Duration and Reversibility of Change.

Size and Scale of Change for Landscape Receptors

- 10.5.13. Whilst the site has an existing rural use and, in the short-term, there would be a large-scale of change to the large-scale arable field and gently rising landform, in the long-term, this would reduce to a medium scale of change due to the existing strong influence of adjacent employment uses and infrastructure. There would be a medium scale of change to existing vegetation which would have a negative effect in the short-term, becoming positive in the long-term due to the quantity of hedgerow reinstatement and woodland planting proposed. There would be a large scale of change, in the

short-term, to the perception of open field and sense of enclosure present to the south and west which would reduce to medium in the long-term as proposed planting on earth-mounds became established. In the short-term there would be a medium scale of change to the sense of stillness due to the introduction of construction machinery and prior to the establishment of earth mounds which would start to screen activity. In the longer term this would reduce to small as proposed planting became established. There would be a small scale of change to all other elements and features and aesthetic and perceptual characteristics of the site.

- 10.5.14. The size and scale of change to the localised area of LCA 5 Tamworth Fringe Uplands (defined in paragraph 10.4.22) would be medium in the short-term prior to the establishment of proposed planting but would reduce to small in the longer term.

Geographical Extent of Change for Landscape Receptors

- 10.5.15. The geographical extent of landscape change would be greater in the short-term during construction and as proposed planting became established. In the longer-term changes would be largely limited to the site and its immediate vicinity by a combination of landform, proposed earth mounds existing vegetation, existing buildings and the proposed planting, as well as the expansion of commercial development to the south. The ZTV, illustrated on **Drawing LAJ-3 (Appendix 10.1, Volume 3)**, shows that the greatest theoretical visibility is largely contained within the site itself in the long-term. The geographical, perceptual effect of the proposed development would therefore be small.

Duration/Reversibility of Change for Landscape Receptors

- 10.5.16. The development would be permanent.

Overall Magnitude of Change for Landscape Receptors

- 10.5.17. Having assessed the size and scale, geographical extent and duration of potential landscape effects it is then possible to determine the overall magnitude of landscape change which would be experienced by each of the landscape receptors (see **Table 10.17, Appendix 10.2 of Volume 3**).
- 10.5.18. Existing vegetation within and around the site would experience a Slight / Medium, negative magnitude of change in the short-term due to the removal of hedgerow to enable access. In the long-term the magnitude of change would increase to medium with the extensive areas of, on and off-site, proposed woodland and hedgerow planting. The large-scale arable field and gently rising landform would experience a medium magnitude of change. The sense of stillness within the site would experience and Slight / Medium magnitude of change in the short-term during construction and before proposed planting became established which would reduce to Slight in the longer term. All other elements and features and aesthetic and perceptual characteristics would experience a Slight/ Medium or Slight magnitude of change reducing over time as proposed planting became established.
- 10.5.19. The localised area of LCA 5 Tamworth Fringe Uplands (defined in paragraph 10.4.22) assessed would experience a Slight / Medium reducing to slight magnitude of change. The proposed development would introduce new commercial development of a similar scale to existing large-scale commercial development to the immediate south and west. In the short-term the proposed development would be more intrusive within the character area, but as proposed planting establishes the magnitude of change perceived within the localised area would reduce.

Assessment of Landscape Effects and Significance

- 10.5.20. There would be a moderate and negative level of effect on the arable field and gently rising landform. There would be a minor / moderate and negative short-term effect on the sense of stillness which would reduce to Minor in the longer term. There would be a minor / moderate, short-term negative effect on existing vegetation which over time would become moderate and positive due to the reinstatement of historic field boundaries and proposed woodland copses and native woodland planting around the edges of the site which would create a net gain in structural vegetation. The level of effect on lighting would be Minor/Negligible and negative in both the short and long-term since the area is already affected by high light levels emitted by surrounding employment uses and infrastructure.
- 10.5.21. The effects on the localised area of LCA 5 Tamworth Fringe Uplands (defined in paragraph 10.4.22) assessed would be less than significant (minor/moderate) but negative in the short-term, since large-scale commercial development is already a characteristic of the local area. The level of effect would reduce over time to Minor as proposed planting became established and the proposed development became less intrusive within the character area. The proposed inclusion of off-site areas including the reinstatement of historic hedgerows and a proposed local park which would soften the existing prominent edge of Dordon would help to mitigate potential effects on overall character.

ASSESSMENT OF POTENTIAL VISUAL EFFECTS

Assessment of Sensitivity of Visual Receptors, and the Magnitude of Change, at each Viewpoint

- 10.5.22. **Tables 10.18 and 10.19 in Appendix 10.2 (Volume 3)** summarise the sensitivity of the receptors at each of the viewpoints, and the magnitude of potential visual effects. The criteria used for this analysis are taken from GLVIA 3 paragraphs 6.31 to 6.41. An analysis of the visual effects of the development on each of the visual receptors groups is set out in paragraphs 10.5.23 to 10.5.52 below, and this draws upon the viewpoint assessments in **Appendix 10.2 (Volume 3)**.

Assessment of Visual Effects and Significance

- 10.5.23. The assessment of visual effects, and whether these are significant, is addressed in **Table 10.18 of Appendix 10.2 (Volume 3)**.
- 10.5.24. The proposed development would result in potentially significant negative effects for walkers on PRoW AE45 and AE46 (see viewpoints 3, 4 and 10) which extend through the off-site areas to the east of the site and along the eastern boundary of the site. The effect on views would reduce over time as proposed new planting on earth mounds becomes established.
- 10.5.25. All other effects would be less than significant as a result of earth mounds which would initially screen the lower levels of built form which would be set down into the landscape at a lower elevation than the existing landform. Over time proposed native woodland planting on earth mounds, intervening and reinstated hedgerow boundaries, woodland copses and vegetation within and around the proposed local park which extends along the prominent settlement edge of Dordon would progressively screen and filter views towards and the massing of proposed built form. Proposed built form would be viewed within the context of existing large-scale development to the south of the A5 dual-carriageway and the west of the M42.

Likely Construction Effects (temporary)

10.5.26. The predicted effects of the proposed development on visual amenity during construction will arise from activities and processes being carried out on the site (refer to Chapter 3 for details). The construction activities will be of temporary nature and are likely to include the following (as listed below). Various method statements and strategies will be prepared to ensure surrounding landscape features and habitats are protected and the effects on visual amenity are minimised. This can be controlled through planning conditions.

10.5.27. Changes to visual amenity during the construction phase will include:

- Creation of Site access and temporary roads;
- The protection of trees to be retained;
- Stripping and storage of topsoil and subsoil;
- Removal of hedgerows and trees to enable access;
- Stockpiles and material storage areas;
- Mobile construction plant such as excavators and lorries;
- Site compound(s), utilities and protective hoardings;
- The presence of partially constructed buildings with cranes and scaffolding;
- Increase in movement of plant and other traffic; and
- Construction lighting in winter months.

10.5.28. The following mitigation measures are proposed to minimise the impact on the visual amenity during construction:

- The protection of trees and hedgerows to be retained;
- The positioning of stockpiling and compounds within less visually sensitive areas;
- Use of Site hoarding; and
- Early implementation of proposed planting within on and off-site areas.

10.5.29. It is likely that there would be significant, but temporary, effects on the views of walkers, cyclists and riders on the closest PRoW (AE45 and AE46) (see viewpoints 1, 3, 4, 8 and 10). There would also be significant but temporary effects on the views of residents and the edge of Birchmoor to the north and Dordon and Polesworth to the east.

Effects on Residential Receptors

10.5.30. There are approximately twenty-four semi-detached, 2 storey, properties along Kitwood Avenue, approximately six, semi-detached, 2 storey properties along Barn Close, approximately three, detached and semi-detached, 1 storey properties along Ashlea and approximately four, detached, 2 storey properties along Browns Lane within the settlement edge of Dordon to the east with the potential to experience views. Viewpoints 5, 20 and 21 illustrate the clearest, publicly accessible views from the settlement edge. From parts of the settlement edge proposed built form would be largely screened by an established, intervening, copses which would be extended. Mixed native, hedgerows with trees have been proposed along historic field boundaries and would be visible in the view on lower ground. Built form would be seen at a distance in the context of large-scale commercial development to the south of the A5 and the rooflines of large-scale commercial development to the west beyond the M42. Proposed earth mounds planted with native woodland would progressively filter views of built form, breaking up its massing. The level of visual effect would be permanent and negative but not significant.

- 10.5.31. There are approximately five, semi-detached, 2 storey properties along Quarry Close to the east with the potential to experience views. Viewpoint 7 illustrates a publicly accessible view within the vicinity. There would be glimpses towards proposed built form where there are gaps within the existing hedgerow. Planting within the proposed local park which extends along the eastern boundary of the off-site area would screen potential glimpses over time. The level of visual effect would be permanent and negative but not significant.
- 10.5.32. There are approximately seven, detached and semi-detached, 2 storey properties along the A5 to the east with the potential to experience views. Viewpoint 8 and 9 illustrate publicly accessible views within the vicinity. Existing views are available of the rooflines of large-scale commercial development to the west of the M42 in Tamworth across open agricultural fields and the prominent settlement edge of Dordon to the east on rising ground. Built form would be visible beyond earth mounding which would be planted up with mixed native woodland. Earth mounding would screen views of the lower levels of the proposed development and the movement of vehicles through the site immediately. Over time the proposed native woodland planting would filter views of built form. The existing hedgerow along the southern boundary of the site and off-site areas would also help to screen potential views from the south of the A5. The level of visual effect would be permanent and negative but not significant.
- 10.5.33. There are approximately twenty-nine, detached and semi-detached, 1 storey properties along Birch Grove to the north with the potential to experience views. Viewpoint 17 illustrates the view from Birch Grove. Proposed built form has been set back from the edge of Birchmoor by a varying distance of between approximately 134m and 75m. A strip of small-scale fields, bound by established native hedgerow with trees, abut the back gardens of the closest residential properties. These fields increase the distance of the nearest residential properties from proposed built form by a further 20m. The area north of proposed built form would be designed with earth mounds planted up with mixed native woodland. In the short-term the upper parts of proposed built form may be visible in the distance. Over time, as native woodland planting became established views would be entirely screened. The level of visual effect would be permanent and negative but not significant.

Effects on Walkers, Cyclists and Riders on PRow

- 10.5.34. Bridleway AE45 extends along part of the eastern boundary and within the eastern edge of the site. It is proposed that the bridleway be diverted around Plot B shown on the Parameters Plan to the east of the proposed earth mounds with native woodland planting. Viewpoint 1, 3 and 10 illustrate representative views. Views across open fields are currently available. Large-scale commercial development is visible in the background of the view to the south, beyond the A5 and to the west on the edge of Tamworth beyond the M42. Cranes associated with new development within the Polesworth School grounds are visible on rising ground to the north. Proposed built form would be visible to the west, in front of, and to the west of existing visible commercial development. Built form would be initially screened by earth mounds of between 2 and 5m height. Built form would also be placed on a platform largely below existing ground level such that the lower parts of the building would be immediately screened. The earth mounds would be planted with mixed, native, woodland which would progressively screen built form as trees became established. In the short-term there would be a Major, negative and significant level of effect on the views of walkers and riders. Over time, this would reduce to less than significant and negative as a result of proposed woodland planting becoming established.

- 10.5.35. Footpath AE46 extends from public bridleway AE45 to the east and turns south connecting with the A5. Viewpoints 3, 4 and 8 illustrate a range of views from the footpath. Existing views are available of the rooflines of large-scale commercial development to the west of the M42 in Tamworth across open agricultural fields and the prominent settlement edge of Dordon to the east on rising ground. Built form would be visible beyond earth mounding which would be planted up with mixed native woodland. Earth mounding would screen views of the lower levels of the proposed development and the movement of vehicles through the site immediately. Over time the proposed native woodland planting would filter views of built form. PRow AE46 extends along a historic field boundary and the historic native hedgerow would be reinstated which over time would further screen views of proposed built form to the west. In the short-term there would be a Major, negative and significant level of effect on the views of walkers. Over time, this would reduce to less than significant and negative as a result of proposed woodland and hedgerow planting becoming established
- 10.5.36. Footpath AE48 extends from the A5 along the edge of Dordon, to the east of the site. Viewpoints 7 and 21 illustrate the range of views available from the footpath. There would be glimpses towards proposed built form, in the context of large-scale commercial development to the south of the A5 and to the west of the M42, where there are gaps within the existing hedgerow. Planting within the proposed Local Park, which extends along the eastern boundary of the off-site area, would screen potential glimpses over time. The level of visual effect would be moderate to moderate / minor, negative but not significant in the short term reducing to Minor in the longer term as vegetation becomes established.
- 10.5.37. Footpath AE52 extends in a southerly direction from the A5 to the south of the site. Viewpoint 9 illustrates the view where the footpath connects with the A5. Proposed built form would be visible above the existing native hedgerow with trees in the far left-hand-side of the view. Proposed built form would be viewed in the context of, facing, large-scale commercial buildings to the south of the A5 and existing road infrastructure which is characteristic of the location. The view immediately across the road and to the east would remain open. Proposed earth mounds with native woodland planting would progressively filter views of proposed built form. The level of visual effect would be permanent and negative but not significant.
- 10.5.38. Footpath AE55 extends in a southerly direction from the A5 to the south of the site. Viewpoints 11 and 12 illustrate a range of views available. A large section of the footpath is currently stopped up whilst construction of large-scale commercial development to the south of the A5 is completed. Limited access is therefore available at the time of writing. At its closest point to the proposed development (Viewpoint 11) proposed built form would be visible across the A5 dual-carriageway but set within a context of large-scale commercial buildings and traffic infrastructure to the south and west. The existing hedgerow would be retained to either side of the proposed access which would help to screen the lower levels of the proposed building set on a platform largely below existing ground level. Built form would be set-back between approximately 58 and 35m from the existing hedgerow and new native tree and shrub planting has been proposed in this area around a proposed detention basin (SuDS/attenuation pond) to ensure that the frontage of the site is in character with the frontage of recently constructed commercial development to the south of the A5. There would be a moderate, negative, but not significant level of visual effect which would reduce over time as vegetation establishes. No views were available as a result of landform and existing vegetation where the footpath connects with the settlement of Freasley.

Effects on Travellers on Roads

- 10.5.39. The A5 dual carriageway forms the southern boundary of the site. Access would be taken from the A5. The ZTV indicates that there would be relatively extensive visibility of proposed built form from the closest part of the A5. Viewpoints 9, 10 and 11 illustrate views from along the A5.
- 10.5.40. Proposed built form, including the proposed access, would be visible across the A5 dual carriageway but set within a context of large-scale commercial buildings and traffic infrastructure to the south and west. The existing hedgerow would be retained to either side of the proposed access which would help to screen the lower levels of the proposed building set on a platform predominantly below existing ground level. Clear views into the development would be available through the proposed access itself. Built form would be set-back by between approximately 58 and 35m from the existing hedgerow and new native tree and shrub planting has been proposed in this area around a proposed detention basin to ensure that the frontage of the site is in character with the frontage of recently constructed commercial development to the south of the A5.
- 10.5.41. Travellers along the A5 would pass through an area of settlement (Dordon) before entering an area with open fields to the north and commercial development to the south. Beyond this more open area they would then experience large-scale commercial development to either side with the proposed development to the north, before entering the roundabout junction and further areas of large-scale commercial development.
- 10.5.42. The level of effect on the views of vehicle users would be permanent and negative but not significant.
- 10.5.43. The M42 forms the western boundary of the site. No views would be available from the carriageway of the M42 which is set in cutting.
- 10.5.44. Cockspur Street, Green Lane and Birchmoor Road are present to the north within Birchmoor. Viewpoints 2, 16 and 18 illustrate a range of views from these routes.
- 10.5.45. Viewpoint 2 illustrates the view from Birchmoor Road at the entrance to Birchmoor Farm. Along much of Birchmoor Road views towards the proposed development are screened by the existing, intact, hedgerow. The upper parts of large-scale commercial warehouses present to the south of the A5 are visible in the background. Initially the upper parts of proposed built form would be visible in the background of the view, in front of existing, large-scale commercial warehouses. Earth-mounding has been proposed to the north of proposed built form which would not be visible in the view. This would be planted with mixed native woodland which over time would screen views of proposed built form. The level of effect on the views of vehicle users would be permanent and negative but not significant.
- 10.5.46. Viewpoint 16 illustrates the clearest view from Green Lane. The upper rooflines of proposed built form may be visible beyond extensive, and established, native tree and shrub planting along the sides of the M42. Large-scale commercial development would be characteristic in this location. The level of effect on the views of vehicle users would be permanent and negative but not significant.
- 10.5.47. Viewpoint 18 illustrates the view from Cockspur Street. Glimpses of proposed built form in front of, and overlapping, existing large-scale commercial development to the south of the A5, may be available through gaps and thinner areas of an existing native hedgerow boundary. Proposed earth mounds planted with mixed native woodland immediately to the north of proposed built form would

screen views over time. The level of effect on the views of vehicle users would be permanent and negative but not significant.

Effects on Users of Areas of Open Space

10.5.48. There are two areas of open space to the east of the site on the edge of Dordon with the potential for views. The first of these (Kitwood Avenue Recreation Ground) forms part of the Local Plan. The second (Site Allocation OS1), which adjoins the A5, is proposed as an Open Space Transfer Location in the Local Plan. The second does not yet exist but it is proposed that this is connected to the proposed local park which would extend along the settlement edge of Dordon.

10.5.49. Viewpoint 5 and 6 illustrate potential views from Kitwood Avenue Recreation Ground. Built form within the development site would be largely screened by an established, intervening, copses which would be extended as part of the proposals. Mixed native, hedgerows with trees have been proposed along historic field boundaries and would be visible in the view on lower ground. The level of effect on the views of users of the area of open space would be permanent and negative but not significant.

Summary of Visual Effects

10.5.50. In summary, the visual effects of the proposed development would be localised and significant negative effects would be limited to changes to the views available from PRoW AE45 and AE45. The development proposed would be viewed within a context of existing large-scale commercial development to the immediate south and west. This characteristic would intensify as proposed employment allocations are built out in the future.

10.5.51. Visual effects would reduce over time as proposed native woodland planting on earth mounds matured, with the massing of built form becoming progressively filtered by proposed planting.

ASSESSMENT OF THE POTENTIAL EFFECT OF DEVELOPMENT ON THE GAP BETWEEN SETTLEMENTS

Introduction and Objectives

10.5.52. As noted in Section 10.2, the site is located within an area defined by Policy LP4 within the Local Plan as a Strategic Gap. As described in paragraphs 10.2.9 of this report, the policy wording is as follows:

“In order to maintain the separate identity of Tamworth and Polesworth with Dordon, a Strategic Gap is identified on the Policies Map in order to prevent their coalescence. Development proposals will not be permitted where they significantly adversely affect the distinctive, separate characters of Tamworth and Polesworth with Dordon. In assessing whether or not that would occur, consideration will be given to any effects in terms of the physical and visual separation between those settlements”.

10.5.53. The supporting text which accompanies the policy states that:

“The purpose of policy LP4 is to retain and respect the separate identities and characters of the settlements of Tamworth and Polesworth with Dordon to avoid their coalescence. The Strategic Gap seeks to retain and maintain the sense of space, place and separation between these settlements so that when travelling through the strategic gap (by all modes of transport), a traveller should have a clear sense of having left the first settlement, having travelled through an undeveloped area and then entering the second settlement”.

10.5.54. Viewing the policy and supporting text in its entirety, indicates that is not only the physical and visual separation of settlements but also the experience of the journey between settlements, the sense of leaving one settlement, travelling through a gap before entering the next settlement.

Methodology: How to Define an Effective Gap between Settlements

10.5.55. Strategic and Local Gaps (sometimes also known as Green Gaps or Green Wedges) are used by many planning authorities to ensure that settlements retain their separate identities. The precise wording of policies relating to strategic gaps varies, but many have now converged on a set of fundamental principles, underpinned by research and Appeal Decisions.

10.5.56. One of the most quoted research documents regarding the functionality of strategic gaps was prepared for the Office of the Deputy Prime Minister (“Strategic Gap and Green Wedge Policies in Structure Plans, Main Report”, ODPM, 2003). This review notes that many authorities accept that the robustness of a gap depends on much more than the physical distance between settlements, or visibility between settlements. For example, in 1998 the Inspector on the Eastleigh Local Plan Inquiry stated that the following factors (often known as the Eastleigh Criteria) should be used to define the effectiveness of a gap (see paragraph 4.15 of the ODPM report):

- Distance;
- Topography;
- Landscape character/type;
- Vegetation;
- Existing uses and density of buildings;
- Nature of urban edges;
- Inter-visibility (the ability to see one edge from another);
- Intra-visibility (the ability to see both edges from a single point);
- The sense of leaving a place [and arriving somewhere else].

10.5.57. Careful application of the Eastleigh Criteria means that the gaps between settlements will vary in their size and character – some may be over a kilometre wide and others just a few hundred metres – the key is whether the factors above work together to maintain a perception of separation between the settlements. Equally importantly, the careful application of the Eastleigh criteria means that some development within a designated gap could be possible, provided that the sense of separation between settlements is not undermined.

10.5.58. This approach has been confirmed in various Policy frameworks including: The Policy Framework for Gaps produced by the Partnership for Urban South Hampshire (known as PUSH, produced in 2008), The Fareham Landscape Assessment 2017 (LDA) and Core Strategy (adopted 2011), the Horsham District Planning Framework (adopted 2015), the Basingstoke and Deane topic paper on the function of strategic gaps (2014) and resulting strategic gap policy and Tonbridge and Malling Local Plan policy CP5.

10.5.59. In summary, whilst there are many terms being used to define the function of a gap, all are agreed that it should focus on the sense of separation between settlements, which depends upon several factors rather than just distance and views.

Assessment of the potential effects of development using the Eastleigh Criteria

Distance

- 10.5.60. The minimum physical distance between the edge of Dordon / Polesworth and Tamworth is approximately 1.2km. The physical distance between the edge of Birchmoor and existing large scale commercial development to the south is approximately 765m.
- 10.5.61. The proposed development would not affect the physical distance between Birchmoor and Tamworth or between Birchmoor and Dordon / Polesworth.
- 10.5.62. The proposed development would reduce the physical distance between Dordon / Polesworth and Tamworth by approximately 430m leaving a physical gap of approximately 777m (circa 0.75km). It would reduce the physical gap between Birchmoor and commercial development to the south to a length of between approximately 155 and 95m.
- 10.5.63. We note that in the surrounding area there are smaller gaps between settlements which remain effective e.g. the gap of approximately 500m between Coventry and Nuneaton, of approximately 500m between Church Lawford and Long Lawford and of approximately 370m between Hinckley and Barwell. Indeed, the gap between Dordon and Grendon will be approximately 600m when site allocation H4 is built out. Furthermore, the gap between Atherstone and Grendon will be less than 50m (essentially the width of the West Coast Mainline) when/if site allocation H2 and Reserved Housing Site RH1 were to come forward for development. The Local Plan therefore sets two precedents very close to the application site where smaller gaps have been deemed to be effective.
- 10.5.64. The gap between settlements would therefore remain effective and would be formed by open arable land which would become increasingly rural in character as a result of proposed offsite planting and reinstatement of historic field boundaries.

Topography

- 10.5.65. As noted within the assessment of landscape character (paragraph 10.4.12. of this assessment) the topography of the site gently rises towards the north with the highest point of the site located along the edge of the settlement of Birchmoor. Land to the north, south and east rises more sharply up to an elevation of between approximately 110 and 115m. A substantial spoil heap associated with Birch Coppice Colliery rises above the natural landform. The site is therefore at the lowest point of the landform and at an elevation which would correspond with that of existing large-scale commercial development to the south. Earth mounds have been proposed around the perimeter of the site, with varying gradients, to merge into the existing landform. These would be planted with mixed, native, woodland to soften their appearance within the landscape. The landform across the gap assists with creating a sense of separation with residential development at higher elevations and existing and proposed commercial development at lower elevations.

Landscape Character

- 10.5.66. The character of the landscape to the immediate south and west of the site is strongly influenced by large-scale commercial development and infrastructure. Settlement is present to the north and east of the proposed development on elevated ground.
- 10.5.67. Proposed built form within the site has been contained in the southwestern corner of the site, adjoining existing large-scale commercial development and infrastructure, forming the fourth,

commercial quadrant at the motorway junction. Large-scale commercial development is already characteristic of this part of the landscape.

10.5.68. Off-site reinstatement of historic hedgerow boundaries and the extension and creation of woodland corner copses would reinforce the arable, open character of the landscape, between Dordon/ Polesworth and the proposed development, enhancing the scenic quality of the landscape and intensifying its rural character, creating a place in its own right. Proposed on and off-site planting would reduce the influence of both proposed and existing development and infrastructure. A clear sense of passing through an open, rural, intact landscape before entering an area of large-scale commercial development would remain and be enhanced.

Vegetation

10.5.69. There is little vegetation within the site and off-site areas apart from boundary hedgerows to the south and west. In the adjoining landscape there are established hedgerow boundaries with corner woodland copses.

10.5.70. It has been proposed that historic field hedgerow boundaries, with corner woodland copses, be reinstated within off-site areas between Dordon / Polesworth and the proposed development. Planting has also been proposed within the proposed local park which would extend along the prominent settlement edge of Dordon softening and reinforcing the settlement edge. Woodland planting has been proposed on earth mounds to the northern and eastern edges of built form breaking down the mass of built form and providing separation between Birchmoor and proposed built form.

10.5.71. There would be significant areas of new native planting within the site and off-site area which would reinforce historic patterns and help to provide physical and perceptual separation between the settlement edge and the commercial area to the south and west.

Existing Uses

10.5.72. There is a clear difference in land use between Tamworth and Dordon / Polesworth and between Birchmoor and large-scale commercial development to the south, although the arable land use is strongly influenced by commercial uses to the south and west and by the prominent, and elevated, settlement edge to the east. The land between the two settlements is characterised by arable fields with limited vegetation.

10.5.73. The gap is not free from existing built form with a number of residential properties to the north of the A5 within the gap.

10.5.74. The proposed woodland planting on earth mounds along the northern and eastern edges of the site and the reinstatement of historic hedgerow boundaries with reinforcement by proposed corner copses would strengthen the rural character of the remaining land between the settlements and proposed built form.

Nature of Urban Edges

10.5.75. The existing landscape is characterised by prominent settlement edges on elevated ground to the east, the vegetated edge of Birchmoor to the north and large-scale commercial and employment uses and infrastructure, on lower ground, to the south and west. The character of existing edges is distinctly different. The proposed development has been located in the south west corner of the gap and it would align with, and form part, of the character of the existing large-scale commercial edge.

- 10.5.76. Proposed on and off-site planting would both often the existing commercial edge and reinforce the rural character of the gap creating a clear sense of separation between edges.
- 10.5.77. The proposed development would not change the character of the edge in its location but instead would form part of the existing urban edge.

Inter and Intra visibility

- 10.5.78. There are limited publicly accessible views from the edges of both Birchmoor and from Dordon / Polesworth. Viewpoints 5 and 20 provide the clearest views back from the edge of Dordon / Polesworth towards the proposed development and Viewpoint 1 and 17 provide the clearest views back towards the proposed development from the edge of Birchmoor.
- 10.5.79. From the edges of Dordon / Polesworth the proposed development would be seen, from elevated ground, across an open, rural landscape, set against a strong backdrop of existing large-scale commercial development. Potential views of built form would be partially screened by existing vegetation and would be progressively filtered through proposed vegetation on earth mounds. Importantly, proposed off-site planting, extending through existing fields and along the settlement edge of Dordon, would not only progressively screen potential views but would also enhance and strengthen the rural character of the landscape between settlements. The ZTV indicates that in the long term there would be no visibility of the proposed development from the edge of Dordon and filtered, intermittent visibility towards the proposed development from Polesworth.
- 10.5.80. Glimpsed views towards the site are available from Birchmoor through gaps in existing vegetation. The ZTV indicates that proposed planting on earth mounds to the north of the proposed development would entirely screen potential views in the long-term.
- 10.5.81. When walking on footpath AE46 and bridleway AE45, within the gap, there is clear intra-visibility of the proposed development and the settlement edge across open arable fields, which as noted above would become increasingly rural and with increased scenic quality, as a result of proposed off-site planting.
- 10.5.82. A clear sense of visual separation would remain between settlements and the proposed development, with the proposed development viewed in the context of existing commercial development of a similar character, across an increasingly rural and intact landscape.

The Sense of Leaving a Place and Arriving Somewhere Else

- 10.5.83. Vehicle users along the A5 and walkers along the PRow network are the key receptors who currently experience a sense of leaving the settlement, passing through an area of open landscape before entering an area of large-scale commercial development and extensive road infrastructure at J10.
- 10.5.84. Viewpoints 9 and 11 illustrate representative views from the A5 towards existing arable fields. Should the proposed development be built views towards an open, arable landscape would remain. Proposed off-site planting would enhance and strengthen the rural qualities of the remaining landscape and the proposed development has been located such that it would form part of the existing context of large-scale commercial development and infrastructure.
- 10.5.85. When walking along the PRow network (see Viewpoints 3, 4 and 8) walkers would experience leaving the built up edge of the settlement, walking through open, rural, fields, with the proposed development distinct from the rural landscape within the context, and forming part of, the existing

area of employment uses and infrastructure to the south and west. Proposed off-site planting would enhance the scenic quality and rural character of remaining fields within the gap.

10.5.86. A clear sense of leaving a place and arriving somewhere else would remain.

Conclusions of the Gap Analysis

10.5.87. An assessment of the existing gap and potential effects on the gap as a result of the proposed development has been prepared using an established methodology (Eastleigh criteria).

10.5.88. This assessment has concluded the following:

- The gap between settlements would remain effective and would be formed by open arable land which would become increasingly rural in character as a result of proposed offsite planting and reinstatement of historic field boundaries. The size of the remaining gap is larger than existing examples of effective gaps between settlements in the local area;
- The landform across the gap assists with creating a sense of separation with residential development at higher elevations and existing and proposed commercial development at lower elevations;
- The proposed development would form part of a location for which there is an existing commercial character. The character and scenic quality of the remaining gap would become increasing rural and intact as a result of proposed off-site planting;
- There would be significant areas of new native planting within the site and off-site area which would reinforce historic patterns and help to provide physical and perceptual separation between the settlement edge and the commercial area to the south and west;
- There is a clear difference in land use between Tamworth and Dordon / Polesworth and between Birchmoor and large-scale commercial development to the south which would remain. The quality and character of the remaining gap would be reinforced by proposed off-site planting;
- The proposed development would not change the character of the edge in its location but instead would form part of the existing urban edge;
- A clear sense of visual separation would remain between settlements and the proposed development, with the proposed development viewed in the context of existing commercial development of a similar character, across an increasingly rural and intact landscape; and
- A clear sense of leaving a place and arriving somewhere else would remain.

10.5.89. With regard to Policy LP4, the gap assessment concludes that, should the proposed development go ahead, the separate identity of Tamworth and Polesworth with Dordon would remain both in relation to physical separation and in terms of their distinctive character. A sense of separation would remain whether travelling along the A5 or along PRow within the gap; travellers would have a clear sense of having left the first settlement, having travelled through an undeveloped area and then entering a second settlement.

10.6 CUMULATIVE EFFECTS

10.6.1. Following a review of proposed developments currently in the public domain the following schemes have been scoped into the LVIA for consideration of potential cumulative landscape and visual effects:

Table 10.1 - Cumulative Schemes

Site	Planning / Appeal Reference	Development	Status
Core 42 (Land at Hall End Farm Watling Street Dordon	MIA/2021/0011	Change of use of 17.47ha of land from agricultural use to employment use within Use Class E(g) - light industrial use, Use Class B2- general industrial use and Use Class B8 - storage or distribution use. Construction of new industrial/warehouse buildings on seven pre-formed development plateaux - comprising up to 63,509 sqm gross floor space for use with Use Class B1(c) - light industrial use, Use Class B2 - general industrial use or Use Class B8 - storage/distribution. Approval sought now for reserved matters of Access, Scale, Layout & Landscaping. (Variation of planning permissions refs; PAP/2017/0532, PAP/2017/0014 and PAP/2013/0269)	Granted and constructed
Birch Coppice Industrial Estate	N/A	Existing business park to the south of	
E2	N/A	Employment allocation in Local Plan.	Allocation
St Modwen Park Tamworth (Land south east of the M42 Junction 10, Tamworth, Warwickshire, B78 2EY)	APP/R3705/W/15/3136495	Development of land within Use Class B1(c) (light industry), Use Class B2 (general industry), and Use Class B8 (storage and distribution), demolition and removal of existing structures and associated works. Details of access submitted for approval all other matters reserved	Appeal allowed and constructed
Centurion Park	N/A	21 acre logistics and distribution park located adjacent to Junction 10 of the M42 Motorway. Centurion Park	Constructed
Relay Park / Warehouses off Relay Drive	N/A	Large scale warehouses	Constructed

10.6.2. Potential cumulative landscape and visual effects area assessed as follows:

- **Core 42:** Potential intervisibility between the proposed development and the existing business park would be limited. Potential views towards the proposed development from within the business park would be screened by large-scale logistics buildings. Potential views from the entrance to the site would include potential built form visible, in the far distance, above the existing vegetation in the far right-hand-side of the view. Proposed built form would be viewed in the context of, facing, large-scale commercial buildings to the south of the A5 and existing road infrastructure which is characteristic of the location. Proposed earth mounds with native woodland planting would progressively filter views of proposed built form. The cumulative sequential effect of the proposed development would be Minor for walkers and Minor / Negligible for vehicle users reducing over time as proposed woodland planting establishes.
- **Birch Coppice Industrial Estate, Employment Allocations E2 and E3:** Birch Coppice Estate and employment allocations E2 and E3 are part of a number of employment sites along the southern side of the A5 (including Core 42 further east). The proposed development would be experienced as an additional development along the A5 within a context of existing commercial development. Viewpoint 9 is located on the A5 adjacent to Birch Coppice Industrial Estate. The proposed development would be viewed at a distance in the context of, facing, large-scale commercial buildings to the south of the A5 and existing road infrastructure which is characteristic of the location. Proposed earth mounds with native woodland planting would progressively filter views of proposed built form. The cumulative sequential effect of the proposed development would be Minor for walkers and Minor / Negligible for vehicle users reducing over time as proposed woodland planting establishes.
- **St Modwen Park Tamworth:** Viewpoints 11 and 13 are helpful when assessing the cumulative relationship between the proposed development and commercial development to the south-east of M42 J10. Proposed built form would be visible across the A5 dual-carriageway but set within a context of large-scale commercial buildings and traffic infrastructure to the south and west. The existing hedgerow would be retained to either side of the proposed access which would help to screen the lower levels of the proposed building set on a platform predominantly below existing ground level. Built form would be set-back by between approximately 58 and 35m from the existing hedgerow and new native tree and shrub planting has been proposed in this area around a proposed detention basin (SuDS / attenuation pond) to ensure that the frontage of the site is in character with the frontage of recently constructed commercial development to the south of the A5. Cumulatively, the proposed development would be in line with the character of facing commercial development and would form the 4th quadrant of commercial development present around J10 of the M42. The cumulative sequential effect of the proposed development would be Minor for walkers and Minor / Negligible for vehicle users reducing over time as proposed woodland planting establishes.
- **Centurion Park:** Intervisibility between Centurion Park and the proposed development is limited to none, but the two developments would be experienced sequentially by Vehicle users and pedestrians moving around the J10 roundabout. The cumulative sequential effect of the

proposed development would be Minor for walkers and Minor / Negligible for vehicle users reducing over time as proposed woodland planting establishes.

- **Warehouses off Relay Drive:** Intervisibility between the warehouses off Relay Drive and the proposed development are limited by existing established vegetation. Viewpoints 14 and 15 indicate that there is no intervisibility at ground level. The rooflines of warehouses off Relay Drive are visible from Viewpoints 5 and 20 in the far distance. Proposed built form would be visible in the distance in the context of large-scale commercial development to the south of the A5 and where the rooflines of large-scale commercial development are visible to the west beyond the M42. Proposed earth mounds planted with native woodland would progressively filter views of both proposed built form, and the existing warehouses off Relay Drive, breaking up the massing of development. The cumulative sequential effect of the proposed development would be Minor for residents on the edge of Dordon reducing over time as proposed woodland planting establishes.

10.7 MITIGATION MEASURES

10.7.1. Measures to avoid or reduce potential landscape and visual effects would be inherent within the design. Aspects of the design which have been considered in relation to this include the following:

- Location of the building moved to the southern end of the site to minimise potential visual effects on residents on the edge of the settlement of Birchmoor and to maintain a sense of separation between the settlement and the proposed development;
- Provision of a local park extending along the eastern boundary of the off-site area, incorporating a community orchard and informal routes would soften the existing prominent edge of Dordon and help to mitigate potential effects on overall character;
- Provision of parkland at the northern end of the site adjacent to the settlement of Birchmoor, with localised earth mounds which would be planted with mixed native trees and shrubs to filter views from the settlement edge;
- Historic field boundaries would be reinstated in the area to the east of the site with provision of mixed, native hedgerow and tree planting to reinforce the rural character of the landscape;
- An area of publicly accessible landscape would be provided along the western edge of Dordon to screen existing housing, present along the ridgeline, and to create a soft green edge to the settlement. It is proposed that this area should include orchard planting and this would provide connection from the existing PRow network to the proposed Open Space Transfer Location OS1 identified within the Local Plan and allow the provision of circular walking routes;
- Copses of mixed native trees would be provided where appropriate at the corners of existing fields to reinforce the rural character and help to filter views from the settlement and PRow towards the proposed development;
- Earth mounds would be created along the eastern edge of the site which would be densely planted with mixed, native trees to help screen and filter views of the proposed development and to reinforce the sense of openness within the remaining arable landscape to the east. Earth mounds would be carefully modelled to fit with the existing landform and would take account of restrictions and easements such as the high pressure gas pipeline;
- Existing native tree and shrub planting along the western boundary of the site with the M42 would be reinforced with new mixed native planting where required to filter views from the M42;

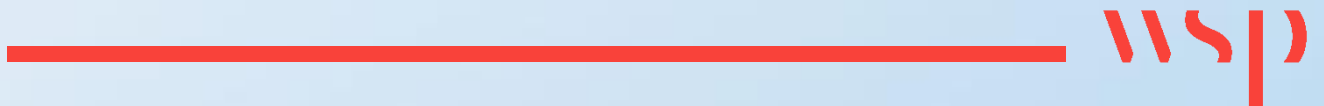
- SuDS would be provided at southern end of the site which would be planted and this zone would reflect the frontage of St Modwen's Park Tamworth across the A5.

10.8 RESIDUAL EFFECTS

- 10.8.1. Measures to avoid or reduce potential landscape and visual effects would be inherent within the design. The scheme would not, therefore be assessed with and without landscape measures.

11

NATURE CONSERVATION AND BIODIVERSITY



11 NATURE CONSERVATION AND BIODIVERSITY

11.1 INTRODUCTION

- 11.1.1. This chapter of the ES assesses the likely significant effects of the proposals in terms of ecology and nature conservation, with additional detail, consideration and survey results set out at **Appendix 11.1 and 11.2**.
- 11.1.2. The chapter describes: the assessment methodology; survey methods; the baseline conditions existing at the site and its surroundings; the likely significant environmental effects of the proposals in respect of ecology and nature conservation; and presents the avoidance and mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed. This chapter has been prepared by Aspect Ecology Ltd.
- 11.1.3. The scope of the assessment is largely focussed on the site itself, although consideration has been given to ecological receptors in the Area of Interest and surrounding areas where appropriate. Notably, the desktop study has included a search for statutory ecological designations within at least 5km of the site boundary, whilst the assessment is informed by survey work undertaken across the Area of Interest over a number of visits.

KEY FINDINGS

- 11.1.4. The site itself is dominated almost exclusively by habitats of negligible ecological value, being dominated by intensively managed arable land. Habitats of value are limited to field boundary habitats including hedgerows and a small number of trees. In addition, an offsite area of mature scrub provides some ecological value, with connectivity to the wider landscape, and accordingly is taken into consideration in regard to the proposals. The proposals incorporate substantial buffers of vegetation to the site boundaries, minimising any potential long term effects of the proposals on associated receptors.
- 11.1.5. In addition to the retention of boundary vegetation, the incorporation of considerable open space and landscape planting will provide compensation for any losses of vegetation and represent ecological habitat enhancements. Similarly, the site offers few existing opportunities for protected species, such that minimal mitigation measures are required, albeit new habitats will provide additional opportunities for faunal species and construction safeguards are proposed.

SCOPING AND CONSULTATION

- 11.1.6. Pre-application advice was obtained from Warwickshire County Council (WCC) in order to inform and scope the ecological survey work to be undertaken to inform the proposals, as set out at Appendix 5971/4 of the Ecological Baseline Report contained at **Appendix 11.1 of this ES**. The survey methodology and scope undertaken is in line with the discussions and advice received from WCC.

11.2 POLICY CONTEXT

- 11.2.1. Key legislation and planning policies of relevance to ecology and nature conservation with regard to the proposals are summarised below. Where relevant, legislative and policy requirements have been taken into account during the design of the proposals, particularly when considering mitigation and enhancement measures, with features and species of nature conservation interest protected

and enhanced where possible in line with the aims of the policies set out, as detailed in the relevant sections of this ES.

LEGISLATION

11.2.2. Key legislation relevant to wildlife and nature conservation includes:

- The Conservation of Habitats and Species Regulations 2017 (as amended)
- Wildlife and Countryside Act 1981 (as amended)
- The Natural Environment and Rural Communities Act (2006)
- The Countryside and Rights of Way Act (2000)
- The Hedgerows Regulations (1997)
- The Protection of Badgers Act (1992)
- The Wild Mammals (Protection) Act 1996

11.2.3. Discussion of this legislation is given where relevant in relation to particular ecological features and fauna in the relevant sections of this chapter and the Ecological Baseline Report contained at **Appendix 11.1**.

NATIONAL PLANNING POLICY

11.2.4. The National Planning Policy Framework (NPPF)³⁸ describes the Government's national policies on 'conserving and enhancing the natural environment' (Chapter 15). NPPF is accompanied by Planning Practice Guidance on 'Biodiversity, ecosystems and green infrastructure' and ODPM Circular 06/2005³⁹.

11.2.5. NPPF takes forward the Government's strategic objective to halt overall biodiversity loss⁴⁰, as set out at Paragraph 179, which states that planning policies and decisions should contribute to and enhance the natural and local environment by:

'identifying and pursuing opportunities for securing measurable net gains for biodiversity'

11.2.6. The approach to dealing with biodiversity in the context of planning applications is set out at Paragraph 180:

'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*

³⁸ Ministry of Housing, Communities & Local Government (2021) 'National Planning Policy Framework'

³⁹ ODPM (2006) 'Circular 06/2005: Planning for Biodiversity and Geological Conservation – A Guide to Good Practice'

⁴⁰ DEFRA (2011) 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services'

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 integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.'*

11.2.7. The above approach encapsulates the 'mitigation hierarchy' described in British Standard BS 42020:201941, which involves the following step-wise process:

- **Avoidance** – avoiding adverse effects through good design;
- **Mitigation** – where it is unavoidable, mitigation measures should be employed to minimise adverse effects;
- **Compensation** – where residual effects remain after mitigation it may be necessary to provide compensation to offset any harm; and
- **Enhancement** – planning decisions often present the opportunity to deliver benefits for biodiversity, which can also be explored alongside the above measures to resolve potential adverse effects.

11.2.8. The measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development (BS 42020:2019).

LOCAL PLANNING POLICY

11.2.9. The North Warwickshire Local Plan was adopted on 29 September 2021. A summary of policies relevant to ecology are set out below.

11.2.10. Policy LP16 (Natural Environment) states that NWBC recognises the importance of the natural environment to the Borough's local character, identity and distinctiveness. The quality, character, diversity and local distinctiveness of the natural environment will be protected and enhanced as appropriate relative to the nature of development proposed. This policy seeks to minimise impacts on, and provide net gains for biodiversity, where possible, relative to the ecological significance of international, nationally and locally designated sites of importance for biodiversity.

11.2.11. Policy LP17 (Green Infrastructure) requires development proposals to, where appropriate, demonstrate how they contribute to maintaining and enhancing a comprehensive and strategically planned Green Infrastructure network. With reference to the Warwickshire, Coventry and Solihull

⁴¹ British Standards Institution (2013) 'Biodiversity – Code of practice for planning and development', BS 42020:2019

Sub-Regional Green Infrastructure Strategy and Offsetting sub-regional Strategy for Green Infrastructure and the local green infrastructure resource development should:

- Identify, maintain and enhance existing Green Infrastructure assets where possible;
- In all cases should optimise opportunities to create links between existing Green Infrastructure within the district and to surrounding sub-regional networks;
- Help deliver new Green Infrastructure assets where specific need has been identified.

11.2.12. Policy LP18 (Tame Valley Wetlands NIA) encourages the protection, maintenance and enhancement of Tame Valley Wetlands Nature Improvement Area.

11.2.13. Policy LP19 (Local Nature Reserves) states that the following Local Nature Reserves will be protected and enhanced:

- Dafferns Wood, New Arley
- Riverside, Atherstone (proposed to be designated)
- Kingsbury Meadow, Kingsbury
- Abbey Green Park, Polesworth
- Cole End Park, Coleshill

11.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

BASELINE METHODOLOGY

11.3.1. The methodology for the survey work can be split into three main areas: a desktop study, habitat survey and faunal surveys. A summary of the survey methodology is given below, and further detail is provided in the Baseline Ecological Report at **Appendix 11.1**.

Desktop Study

11.3.2. In order to compile background information on the site and its immediate surroundings Warwickshire Biological Records Centre were contacted in July 2020, with data requested on the basis of a search radius of 2km.

11.3.3. Information on statutory designations was obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC) database, which utilises data provided by Natural England, with an extended search radius (25km). In addition, the MAGIC database was searched to identify the known presence of any Priority Habitats within or adjacent the site.

11.3.4. In addition, the Woodland Trust database was searched for any records of ancient, veteran or notable trees within or adjacent to the site.

Habitat Survey

11.3.5. The site was surveyed in July 2020 in order to ascertain the general ecological value of the land contained within the boundaries of the site and to identify the main habitats and ecological features present.

- 11.3.6. The site was surveyed based on standard Phase 1 Habitat Survey methodology⁴², whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail through Phase 2 surveys. This method was extended, in line with the Guidelines for Preliminary Ecological Appraisal⁴³ to record details on the actual or potential presence of any notable or protected species or habitats.
- 11.3.7. Using the above method, the site was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified. The nomenclature used for plant species is based on the Botanical Society for the British Isles (BSBI) Checklist.

Faunal Surveys

- 11.3.8. General faunal activity, such as mammals or birds observed visually or by call during the course of the surveys was recorded. Specific attention was also paid to the potential presence of any protected, rare or notable species.
- 11.3.9. In addition, specific survey work was undertaken (during the appropriate seasonal period) in respect of the protected species including badgers *Meles meles*, roosting bats, wintering birds, and reptiles, as detailed in the Baseline Ecological Report **Appendix 11.1**.

EVALUATION OF ECOLOGICAL BASELINE

- 11.3.10. The evaluation of ecological features and resources is based on professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this ES is based on that described by the Chartered Institute of Ecology and Environmental Management (CIEEM) 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (2018)⁴⁴, which involves identifying 'important ecological features' within a defined geographical context (i.e. international, national, regional, county, district, local or site importance).
- 11.3.11. Features considered to be of importance at the site level only have been scoped out of this assessment (with the exception of protected species which are considered in terms of mitigation and any legislative requirements at the appropriate sections).
- 11.3.12. Further details on this approach and the criteria used for evaluation are provided in the Baseline Ecological Report at **Appendix 11.1**.

⁴² Joint Nature Conservation Committee (2010, as amended) '*Handbook for Phase 1 habitat survey: A technique for environmental audit.*'

⁴³ Chartered Institute for Ecology and Environmental Management (CIEEM) (2017) '*Guidelines for Preliminary Ecological Appraisal.*' 2nd edition.

⁴⁴ CIEEM (2018) '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*', Chartered Institute of Ecology and Environmental Management, Winchester

ASSESSMENT METHODOLOGY FOR EFFECTS

- 11.3.13. The CIEEM publication ‘Guidelines for Ecological Impact Assessment in the UK and Ireland’ (2018)⁴⁵ sets out a methodology for the assessment of potential effects arising from development. These methods have been followed and can be summarised as below.
- 11.3.14. Using the agreed parameters of the scheme, likely effects are determined with reference to aspects of the ecological structure and function on which the feature or resource depends. This includes factors such as the available resources, ecological processes, human influences, historical context, ecological relationships, ecological role or function and ecosystem properties. Based on this context, the nature of the effect is characterised and considered under the following parameters:
- **Positive or negative** – will the activity lead to an adverse, beneficial or neutral effect;
 - **Extent** – the size or amount of an impact, the area of habitat or number of individuals affected;
 - **Duration** – the time for which the impact is expected to last prior to recovery or replacement, i.e. short-term or long-term;
 - **Reversibility** – an effect may be irreversible in that recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it, i.e. permanent or temporary;
 - **Timing and frequency** – some changes may only cause an impact if they coincide with critical life-stages or seasons, whilst frequent events may cause a greater effect than a single event.
- 11.3.15. Based on these parameters, the scale of effect (or magnitude) can be summarised as set out within **Table 11-1**. This is in relation to adverse effects, although a similar scale can be applied to beneficial effects.

Table 11-1 – Assessment of scale of effect

Scale	Description
Substantial	A permanent or long-term effect on the receptor, which may result in severe damage to key characteristics and implications for the integrity of the receptor or its conservation status.
Moderate	Impacts resulting in partial loss of or damage to a receptor, which could have implications for the integrity of the receptor or its conservation status.
Slight	Short-term or temporary impacts resulting in only minor loss of or damage to a receptor, unlikely to have implications for the integrity of the receptor or its conservation status.
Negligible	No effect or only a short-term reversible impact with no long-term effect on the receptor.

⁴⁵ Ibid footnote 7

11.3.16. The likelihood or uncertainty of an effect occurring as predicted is also considered where appropriate.

SIGNIFICANCE CRITERIA

11.3.17. Based on the nature of the effect, an assessment is then made whether the effect on a habitat or species is likely to be ecologically 'significant'. CIEEM guidance defines a 'significant effect' as "an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general", going on to state that "significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)."

11.3.18. Significance is also assessed at an appropriate geographic scale. For example, a significant effect on a Site of Special Scientific interest (SSSI) would be of national significance. Notwithstanding this however, consideration is also given to whether an effect is significant at a scale below the geographic context in which the feature is considered important.

11.3.19. For some ecological features (notably designations), there may be an existing statement of the conservation status of a feature and objectives and targets against which the effect can be judged. For example, Sites of Special Scientific Interest (SSSI) are assessed under six condition categories, namely favourable, unfavourable recovering, unfavourable no change, unfavourable declining, part destroyed, and destroyed. An effect that exerts a change between these condition categories would be considered as significant.

11.3.20. Where no existing statement of conservation status is available, an assessment is made against the existing status and condition of the habitat or species population, as recorded by survey data and background information, taking into account the level of ecological resilience or existing conditions that a habitat or species is currently subject to. An effect resulting in a long-term change to the existing background population trend or status at a given geographical level would be considered as significant. In this regard, a significant beneficial impact could be defined as one that prevents or slows an existing decline in the favourable conservation status of a habitat or population as much as one that permitted a population or habitat area to increase.

11.3.21. The likelihood or uncertainty of an effect occurring as predicted is also considered. To assist with defining certainty, the following scale is used (with broad confidence levels indicated in percentage terms):

- Certain/near-certain: probability estimated at 95% chance or higher;
- Probable: probability estimated above 50% but below 95%;
- Unlikely: probability estimated above 5% but less than 50%; and
- Extremely unlikely: probability estimated at less than 5%.

ASSUMPTIONS AND LIMITATIONS

11.3.22. All of the species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent during different seasons. The Phase 1 habitat survey was undertaken within the optimal season therefore allowing a robust assessment of habitats and botanical interest across the site.

11.3.23. Attention was paid to the presence of any invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). However, the detectability of such species varies due to a

number of factors, e.g. time of year, site management, etc., and hence the absence of invasive species should not be assumed even if no such species were detected during the Phase 1 survey.

- 11.3.24. Densely vegetated habitats within the site have the potential to reduce the detectability of field signs for faunal species such as badgers. A detailed survey was able to be completed and, whilst dense scrub vegetation is present within the site, it is considered that the survey results do provide an accurate baseline to assess the potential for impacts on badger under the development proposals.
- 11.3.25. Any specific survey assumptions or limitations are detailed in the full survey methodologies within Section 2 of the Baseline Ecological Report at **Appendix 11.1**.
- 11.3.26. Overall, no significant general over-riding constraints or limitations were identified, and the surveys undertaken are therefore considered to allow a robust assessment to be made.

11.4 BASELINE CONDITIONS

ECOLOGICAL DESIGNATIONS

- 11.4.1. Ecological designations that occur within the vicinity of the site are summarised at **Table 11-2** below. Further detail is provided in Section 3 of the Baseline Ecological Report (and associated Plan 5971/ECO2) at **Appendix 11.1**.

Table 11-2 – Relevant ecological designations identified within the vicinity of the site

Designation Name	Designation	Approximate Distance and Direction from Site
<i>Statutory Designations</i>		
Kettle Brook	Local Nature Reserve (LNR)	730m SW
Abbey Green	LNR	1.4km NE
Alvecote Pools	Site of Special Scientific Interest (SSSI)	2.3km N
Birches Barn Meadow	SSSI	2.8km NE
Kingsbury Brickworks	SSSI	2.8 km SE
Kingsbury Wood	SSSI	2.9km SE
Hodge Lane	LNR	3km NW
Dosthill Park	LNR	3km W
Thameside	LNR	3.8km NW
Warwickshire Moor	LNR	4.2km NW
<i>Non-statutory Designations</i>		
Tame Valley	Nature Improvement Area (NIA)	245m NW
Freasley Common	Potential Local Wildlife Site (pLWS)	865m SW

Designation Name	Designation	Approximate Distance and Direction from Site
Freasley Green	pLWS	865m SW
Penmire Lake	Local Wildlife Site (LWS)	1.2km SE
Coventry Canal	pLWS	1.2 km NE
The Hollies	LWS	1.3km E
Orchard Colliery West	LWS	1.3km E
Polesworth Abbey Green Park	LWS	1.4km NE
Veteran Oak	pLWS	1.5km NE
The Woodlands	pLWS	1.6km SW
Biddleswood and Copes Rough	pLWS	1.6km SE

HABITATS

11.4.2. The habitats present are described and evaluated in Section 4 within the Baseline Ecological Report (Appendix 11.1). A summary of the habitats present and an evaluation of their level of ecological value is included at **Table 11-3** below.

Table 11-3 – Summary and evaluation of habitats and ecological features within the site

Habitat type	Brief description	Level of importance
Arable	Forms the vast majority of the site, extending off site to the east. Intensively managed for crop production with few weeds.	Negligible
Grassland, Tall Herb, Bramble and Scattered Scrub	Small areas associated with field boundaries.	Site
Hedgerows	Hedgerows present at the northern and southern Site boundaries. Likely provide a habitat resource and movement corridor for wildlife.	Local
Trees	Given their size and age, individual mature trees are considered to offer some ecological interest in their own right.	Local
Hardstanding	Small area of asphalt within the south of the Site, minor colonising weeds.	Negligible
Offsite Scrub	Modest diversity of common woody species, which forms a dense offsite corridor of habitat, providing connectivity with the wider landscape.	Local

FAUNA

Observations of faunal species were made during the surveys of the site, with specific phase 2 survey work undertaken in regard to bats, reptiles, wintering birds, and badgers. Details of the survey work are set out within the Baseline Ecological Report (**Appendix 11.1**). A summary of the results is included at **Table 11-4** below.

Table 11-4 – Summary of faunal use of the site

Species	Brief description of presence / use	Level of importance
Bats	<p>Roosting: No buildings or structures. Small number of trees with suitable features, limited to low roosting potential.</p> <p>Foraging/Commuting: Majority of the Site negligible value to bats, being dominated by open arable land lacking in internal features or corridors. Opportunities limited to boundary hedgerows and offsite scrub.</p>	<p>Site (legislative importance only)</p> <p>Local</p>
Badger	No evidence of setts within the Site during specific surveys. A single Badger scat was recorded within the Site, suggesting Badgers make some occasional use of the Site, albeit background records indicate this species to be scarce in the local area such that the site is unlikely to be of particular importance.	Site (legislative importance only)
Other Mammals	Some common species recorded within the Site, though no notable or protected species, albeit the Priority species Hedgehog is likely to make some use of boundary habitats. Nonetheless, this habitat is common and widespread in the surroundings.	Site
Amphibians (Great Crested Newt)	No breeding habitats present within the Site or vicinity. Suitable terrestrial habitats largely limited to boundary vegetation.	Negligible
Reptiles	Some suitable habitat at field boundaries, where there is grassland / tall herb / scrub habitat. However, specific survey work carried out did not record reptiles to be present.	Negligible
Birds	<p>Common bird species likely to frequent the Site, and arable land may provide sporadic cover for birds seasonally, depending on crop status. Other habitats limited to boundaries / offsite habitats, but likely provide nesting habitats and foraging resource.</p> <p>Specific wintering bird surveys undertaken to date have recorded no significant use of the site by notable species, including those likely to be associated with offsite designations.</p>	Site (legislative importance only)
Invertebrates	No evidence for any protected, rare or notable invertebrate species recorded. Vast majority of the Site dominated by arable land, evidently subject to pesticide use and unlikely to support particular invertebrate interest. Boundary features and offsite habitats likely provide raised interest in the context of the site.	Site

FUTURE BASELINE

- 11.4.3. In the absence of the proposed development coming forward, and assuming current management and farming practices continue, the baseline conditions within the site are expected to remain relatively constant in the future. As such, no significant changes to the baseline would be expected.

11.5 IDENTIFICATION AND VALUATION OF KEY IMPACTS (CONSTRUCTION AND OPERATIONAL)

- 11.5.1. This section sets out the potential significant effects of demolition / construction and completed development phase works on ecological receptors identified as being of ecological importance.
- 11.5.2. Receptors not considered to be of importance at the local level or above (of Site importance only) are scoped out of this assessment, although consideration of mitigation and legislative requirements for protected species, if relevant, is given below.
- 11.5.3. Where embedded mitigation (mitigation by design) is incorporated within the proposals (and therefore integral to the identified parameters of the proposals), these are considered within the initial assessment, below. Where further mitigation measures are proposed (including 'mitigation by design' to be incorporated at the detailed design stage), these are considered later, at section 11.7.

CONSTRUCTION

- 11.5.4. The potential effects considered within this section are those relating to temporary factors arising from the construction process, such as construction site noise or dust production, and which will cease to apply following completion of the proposals (referred to as 'operational phase'). Thus, loss of habitats through permanent land take for development is considered as an 'operational phase' effect, although the land take actually occurs during the construction phase of the proposals.

Ecological Designations

- 11.5.5. All statutory ecological designations are well-removed and separated from the site, whilst the site is not located within any identified Impact Risk Zones associated with ecological designations that are of relevance to the proposed development. Accordingly, no significant adverse effects on any statutory ecological designations are anticipated as a result of construction activities.
- 11.5.6. The site itself is not subject to any non-statutory nature conservation designations, whilst, the nearest such designations are well-separated and removed from the site (with the M42 acting as a significant barrier). Accordingly, no significant adverse effects on any non-statutory ecological designations are anticipated as a result of construction activities.

Habitats and Ecological Features

Hedgerows and Trees

- 11.5.7. The site is bounded by hedgerows to the north and south, along with a small number of semi-mature to mature trees. The majority of the hedgerows and trees will be retained under the proposals, with the exception of the removal of a section of hedgerow to facilitate access, whilst sections of the retained hedgerows will be located in relatively close proximity to construction works. As such, these habitats are at risk of root compaction or damage to vegetation from construction activities. On this basis, construction effects on hedgerows and trees prior to mitigation are considered to be **moderate, adverse** and **medium-term**, and could be significant at the local level (**probable**).

Fauna

Bats (Roosting)

- 11.5.8. No evidence for any use of the site by roosting bats has been recorded during the course of the survey work undertaken.
- 11.5.9. A small number of trees supporting low bat roosting potential are located at site boundaries, all of which form part of retained vegetation under the proposals. Nonetheless, any bat roosts could be affected by disturbance during the construction phase (notably lighting and noise).
- 11.5.10. As such, prior to mitigation, construction effects on roosting bats are considered to be **slight, adverse** and **medium-term**, and **non-significant (unlikely)**.

Bats (Foraging and Commuting)

- 11.5.11. Habitat of potential value to foraging and commuting bats are limited to the boundary hedgerows and offsite scrub habitat. Foraging and commuting bats could be affected during the construction phase by lighting of construction areas. However, such effects would only be for the duration of the construction phase, and the requirement for lighting during construction works is expected to be relatively minimal given the general restrictions and standard working hours. Further, lighting requirements would likely to be mostly during the winter months when bats would be hibernating/less active and therefore less likely to be using habitats present at the site. Foraging and commuting bats could also be affected by noise disturbance, although again, this would be mostly during the day when foraging or commuting bats would be anticipated to be absent. Other construction effects such as airborne pollutants are unlikely to result in direct effects on foraging or commuting bats.
- 11.5.12. Accordingly, prior to mitigation, construction effects on foraging and commuting bats are considered to largely relate to temporary increases in lighting levels, and would be **slight, adverse** and **short-term** and **non-significant (unlikely)**.

Badgers

- 11.5.13. No badger setts were recorded within or adjacent to the site boundary. However, a single badger scat was recorded within the site, suggesting that Badgers make some occasional use of the site. Individual badgers could be affected during the construction phase by construction site hazards such as open pits or chemical spills. Furthermore, disturbance to badgers could be experienced through the lighting of construction areas. However, such effects would only be for the duration of the construction phase, and the requirement for lighting during construction works is expected to be relatively minimal given normal construction working hours. Badgers could also be affected by noise disturbance, although again, this would be mostly during the day when badgers would be absent from the site. Other potential construction effects such as airborne pollutants are unlikely to result in a direct effect on badgers.
- 11.5.14. Accordingly, prior to mitigation, construction effects on badgers are considered to largely relate to construction site hazards and disturbances should individuals enter the site, and would be **slight, adverse** and **short-term**, and **non-significant (probable)**.

Birds

- 11.5.15. Potential effects on bird species during the construction phase relate to potential for direct loss of active nests, resulting in a direct effect on local populations and also constituting a potential offence

under the Wildlife and Countryside Act 1981 (as amended), which affords protection to wild birds and their eggs. In particular in this regard, a small section of hedgerow is to be removed under the proposals (to facilitate access into the site). Construction activities could also result in noise and visual disturbance to nesting birds in close proximity to construction areas, albeit these effects are anticipated to be highly localised.

- 11.5.16. Accordingly, overall (except insofar as these relate specifically to legislative requirements), construction effects on birds are **slight, adverse and short-term, and non-significant (probable)**.

OPERATION

- 11.5.17. The potential effects considered within this section are those relating to the 'operational' phase of the proposals. This includes the loss of habitats through permanent land take for built development, in addition to potential effects resulting from the operation of the proposals such as recreational pressure, and noise and light disturbance.

Ecological Designations

- 11.5.18. All statutory ecological designations are well-removed and separated from the site, which is not located within any identified Impact Risk Zone associated with offsite designations that are of relevance to the proposals. In addition, specific wintering bird surveys carried out at the site to date indicate that the site is not of any functional importance to bird species, including those associated with identified offsite ecological designations.
- 11.5.19. Accordingly, **no significant adverse effects** on any statutory ecological designations are anticipated as a result of operational activities.
- 11.5.20. The site itself is not subject to any non-statutory nature conservation designations, whilst the nearest such designations are well-separated and removed from the site. Accordingly, **no significant adverse effects** on any non-statutory ecological designations are anticipated as a result of operational activities.

Habitats and Ecological Features

- 11.5.21. An assessment of operational effects on habitats considered to form important ecological features is set out below. This largely relates to permanent habitat loss, together with anthropogenic effects such as damage to vegetation from recreational disturbance and pollution. Potential effects such as noise and lighting and disturbance from areas of built development are considered below in relation to faunal species.
- 11.5.22. Consideration of ecological impacts on habitats within the Warwickshire, Coventry and Solihull sub-region (within which the site is located) includes reference to the biodiversity offsetting metric 'Biodiversity Impact Assessment' (BIA) spreadsheet tool produced by WCC. As such, consideration of the proposals in regard to this tool is set out at **Appendix 11.2** in regard to both habitats and linear features. Based on the EIA Location Plan (**Figure 1.1 of Volume 4**), the Parameters Plan (**Figure 3.1 of Volume 4**) and associated assumptions and considerations of these plans using the BIA tool shows the potential for a substantial net gain in respect of the proposals for both habitats and linear features (with in any event loss of important habitats limited to a section of hedgerow in order to facilitate the access).

Hedgerows and Trees

- 11.5.23. The field boundary hedgerows, along with the existing mature trees at the site will be largely retained within proposed landscape buffers as part of the proposals, although some minor losses will be required, in particular including removal of a section of hedgerow to accommodate access at the southern site boundary. The anticipated losses in relation to hedgerows and trees will comprise a very small proportion of the total extent of these habitats at the site.
- 11.5.24. As such, potential adverse effects on hedgerows in the absence of mitigation are considered to be **slight, adverse and long-term**, and **non-significant** at the **local level (certain/near certain)**.

Fauna

Bats (Roosting)

- 11.5.25. Trees identified to offer potential opportunities for use by roosting bats are located entirely within proposed landscape buffers and retained vegetation, such that they can be retained under the proposals.
- 11.5.26. Potential roosting habitats at the site may also be at risk of some disturbance (should bats be present) due to the built development, notably from lighting and increased noise. Nevertheless, a wide landscape buffer is provided between the built development and boundary features, which will minimise the impact of these effects. Therefore, operational effects on roosting bats (should they be present) are considered to be **slight, adverse and long-term** and **non-significant (probable)**.

Bats (Foraging and Commuting)

- 11.5.27. With regard to lighting in particular, effects vary between species, with some bat species such as Common Pipistrelle and Soprano Pipistrelle able to cope with relatively high light levels (of up to 14 lux) (Fure, 2006)⁴⁶ and known to utilise lights as a foraging focus for insects attracted to lights (BCT and ILE, 2009)⁴⁷. However, many bat species (particularly late emerging species such as Brown Long-eared and Myotis bats) will avoid lit areas, and attraction of insects to lit areas can result in adjacent habitats supporting reduced numbers of insects, further impacting on the ability of bats being able to feed.
- 11.5.28. The areas of the site to be affected by the proposed development, are composed of arable land, which is of low value to foraging and commuting bats, whilst buffer of proposed green infrastructure will be retained around the built development (focussed on the existing hedgerows) and considerable new habitats will be created and enhanced, forming substantial habitat around the site.
- 11.5.29. Overall, therefore, largely as a result of potential for lighting to disrupt activity, effects on foraging and commuting bats from the completed development prior to mitigation are considered to be **slight, adverse and long-term**, and **non-significant (probable)**.

⁴⁶ Fure, A. (2006); 'Bats and lighting', The London Naturalist, 85, 1-20.

⁴⁷ BCT and Institution of Lighting Engineers (2009); 'Bats and Lighting in the UK', BCT and Institution of Lighting Engineers.

Badgers

- 11.5.30. No badger setts have been recorded within the site itself, albeit badgers are known to be present within the local vicinity (with evidence for individuals wandering across the site in the form of a single scat). Provision of a substantial landscape buffer along the site boundaries will maintain linkage and open space (and indeed likely provide enhanced foraging opportunities in the long term). The proposals will result in a loss of potential foraging habitat, although the intensively managed arable nature of the majority of the site is such that the internal areas are unlikely to provide more than an occasional transient resource for badgers' dependent on the cropping stage. Furthermore, new landscaped areas will likely provide additional foraging opportunities of greater potential for use by badgers. However, new lighting within the built development could increase light levels along these boundary features, reducing their suitability for species such as badgers.
- 11.5.31. As such, effects on badgers from the completed development prior to mitigation are considered to be **slight, adverse and long-term, and non-significant (probable)**.

Birds

- 11.5.32. The proposals will result in the permanent loss of arable areas, along with a small section of hedgerow (to facilitate access) representing a minor loss of potential nesting habitats for birds, albeit similar habitats and opportunities are present within the Area of Interest and surrounding areas which will remain unaffected. Overall, likely effects on bird species as a result of the operational phase of development would be **slight, adverse and long-term, and non-significant (likely)**.

11.6 CUMULATIVE EFFECTS

- 11.6.1. No other schemes or proposals have been identified within the immediate vicinity of the site that could provide potential for interactive or cumulative effects in terms of ecological receptors. The site is dominated by common and widespread habitats and supports limited interest in terms of faunal species, such that there is limited potential for cumulative losses of rare or notable habitat types or important faunal assemblages as a result of interactive or cumulative effects. Indeed, following mitigation and enhancements (below), the proposals are expected to result in benefits in terms of habitats and the majority of faunal species such that there is unlikely to be potential for significant cumulative adverse effects on ecological receptors resulting from the current proposals.

11.7 MITIGATION MEASURES

- 11.7.1. The development proposals for the site have been developed following an iterative process of design, with a number of mitigation and enhancement measures incorporated as part of the proposed parameters, which have therefore been considered as part of the above assessment (section 11.5). Further 'mitigation by design' would be incorporated during the detailed design process, albeit does not form an integral part of the proposed parameters and accordingly is considered below and has not been considered within the above assessment. Particular measures incorporated within the parameters design (and therefore considered above) in relation to ecology include the following, which therefore relate to the identified operational effects as a result of the proposals:
- Retention of the majority of boundary hedgerows and associated boundary vegetation within landscape buffers along the margins and through the site; and
 - Creation of substantial areas of natural green space (measuring approximately 9ha), to include the provision of native grassland and shrub planting.

CONSTRUCTION

- 11.7.2. Measures required to mitigate for construction effects are detailed below, together with other measures to mitigate for non-significant effects and ensure legislative requirements are met. These relate to measures to be adopted as part of construction activities; measures relating to long-term habitat losses to be incorporated as part of the detailed design are set out under mitigation relating to the operational phase.

Ecological Designations

- 11.7.3. No significant effects of construction activities on ecological designations are anticipated and as such no mitigation is required in respect of ecological designations.

Habitats and Ecological Features

Hedgerows and Trees

- 11.7.4. Additional mitigation measures in regard to ecological habitats include standard construction safeguards and working measures, such as damping down potential dust sources and tree and hedgerow protection measures, including temporary protective fencing where appropriate, which would be undertaken as part of the proposed construction works and could be suitably ensured through the use of a Construction Environmental Management Plan (CEMP) or similar.
- 11.7.5. Retained habitats will not be used for parking of construction machinery or storage of construction materials or chemicals, all of which would be well removed from the retained hedgerow corridors and trees.

Fauna

Bats (Roosting)

- 11.7.6. A small number of trees with potential for roosting bats are present associated with site boundaries, and these trees will be retained under the proposals.
- 11.7.7. Should it prove necessary at the detailed design or reserved matters stage, or for arboricultural or health and safety reasons for works to affect trees with identified low potential to support roosting bats, in accordance with standard guidelines (e.g. Bat Conservation Trust, 2016), the trees will be felled using the 'soft-felling' technique, whereby sections of the tree will be cut and lowered to the ground, followed by leaving the felled sections on the ground for a period of at least 24 hours to allow any bats, should these be present, to escape. In addition, should any considerable time elapse between the existing surveys and commencement (i.e. over 1 year) updated surveys will be undertaken at the appropriate stage prior to works to confirm that no additional bat roosting features or use by roosting bats has developed.
- 11.7.8. Temporary lighting of the construction site may be required for a number of reasons, including for health and safety and site security considerations. To reduce the potential effects of any lighting that is required, lighting will be positioned and directed so as to minimise light spill on to features such as trees. The amount of lighting used overall will be restricted, whilst where possible, any works will be minimised during periods of darkness when bats might be expected to be active.

Bats (Foraging and Commuting)

11.7.9. As outlined above, temporary lighting of the construction site may be required for a number of reasons. To reduce the potential effects of any lighting that is required, lighting will be positioned and directed so as to minimise light spill on to features such as hedgerows and trees.

Badgers

11.7.10. Based on the survey work and background information, no badger setts are present within the site, albeit the assessment has identified potential for disturbance to this species where individual animals enter the site. Accordingly, working measures should be followed to further reduce the risk to individual badgers, including:

- Badgers are a highly mobile species which readily open new setts and vary use of foraging areas, such that, in the intervening period prior to construction works, the potential exists for the use of the site to change. As such, update badger survey work will be undertaken prior to the commencement of construction works, in order to assess levels of use of the affected areas at that time and to determine any new Badger activity. Should any newly created setts be recorded, or additional badger activity be present within the construction areas, licensing may be required in order to close or disturb any relevant new setts to facilitate works (dependent on the situation recorded), with appropriate mitigation put in place as required. Should a new badger sett be created outside of the construction zone (i.e. over 20m from any active construction works), the sett will be retained and safeguarded during construction and a method statement drawn up for the works as appropriate.
- Any trenches or deep pits within the Site that are to be left open overnight will be provided with a means of escape should a badger enter. This could simply be in the form of a roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water;
- Any trenches/pits will be inspected each morning to ensure no badgers have become trapped overnight. Should a badger become trapped in a trench it will likely attempt to dig itself into the side of the trench, forming a temporary sett. Should a trapped Badger be encountered a suitably qualified ecologist will be contacted immediately for further advice;
- The storage of topsoil or other 'soft' building materials in the site will be given careful consideration. Badgers will readily adopt such mounds as setts. So as to avoid the adoption of any mounds, these will be kept to a minimum and any essential mounds subject to daily inspections (or nightly patrols if 24 hour security is present at the site) with consideration given to temporarily fencing any such mounds to exclude badgers;
- The storage of any chemicals at the site will be contained in such a way that they cannot be accessed or knocked over by any roaming badgers;
- Fires will only be lit in secure compounds away from areas of badger activity and not allowed to remain lit during the night; and
- Food and litter will not be left within the working area overnight.

Birds

11.7.11. To avoid an offence under the Wildlife and Countryside Act in regard to bird species, the potential loss of active nests during construction will be avoided by either undertaking clearance of potential bird nesting habitat outside of the bird nesting season (March to August inclusive) or, if necessary, preceding any clearance with an inspection by a suitably qualified ecologist. Any nests identified will

be cordoned off and protected until they cease to be active. Disturbance from noise will be minimised by the adoption of good working practice, such as restricted hours of working and noise-reducing construction measures.

OPERATION

- 11.7.12. On the basis of the current parameters, no likely significant effects relating to the operation of the proposals have been identified, albeit potential exists for effects on badgers and foraging/commuting bats resulting largely from disturbance effects (through light-spill) during the operational phase.
- 11.7.13. Light-spill onto retained and newly created habitat, in particular the retained hedgerows, trees and offsite scrub, will be minimised in accordance with good practice guidance⁴⁸ to reduce potential impacts on badgers, light-sensitive bats (and other nocturnal fauna). This will be achieved through the implementation of a sensitively designed lighting strategy, with consideration given to the following key factors:
- **Light exclusion zones** – no lighting will be used in areas likely to be used by bats (the hedgerow habitat buffers). Light exclusion zones or ‘dark buffers’ may be used to provide interconnected areas free of artificial illumination to allow bats to move around the site;
 - **Appropriate luminaire specifications** – consideration will be given to the type of luminaires used, in particular luminaries should lack UV elements and metal halide and fluorescent sources should be avoided in preference for LED luminaries. A warm white spectrum (ideally <2,700K) should be adopted to reduce the blue light component;
 - **Light barriers / screening** – new planting (e.g. shrubs and trees) or fences, walls and buildings can be strategically positioned to reduce light spill;
 - **Spacing and height of lighting units** – increasing spacing between lighting units will minimise the area illuminated and allow bats to fly in the dark refuges between lights. Reducing the height of lighting will also help decrease the volume of illuminated space and give bats a chance to fly over lighting units (providing the light does not spill above the vertical plane). Low level lighting options should be considered for any parking areas and pedestrian / cycle routes, e.g. bollard lighting, handrail lighting or LED footpath lighting;
 - **Light intensity** – light intensity (i.e. lux levels) should be kept as low as possible to reduce the overall amount and spread of illumination;
 - **Directionality** – to avoid light spill lighting should be directed only to where it is needed. Particular attention should be paid to avoid the upward spread of light so as to minimise trespass and sky glow;
 - **Dimming and part-night lighting** – lighting control management systems can be used, which involves switching off/dimming lights for periods during the night, for example when human activity is generally low (e.g. 12.30 – 5.30am). The use of such control systems may be

⁴⁸ Bat Conservation Trust and Institute of Lighting Professionals (2018) ‘*Guidance Note 08/18: Bats and artificial lighting in the UK*’; Stone, E.L. (2013) ‘*Bats and lighting: Overview of current evidence and mitigation guidance.*’; ILP (2011) ‘*Guidance notes for the reduction of obtrusive light*’ Institution of Lighting Professionals, GN01:2011.

particularly beneficial during the active bat season (April to October). Motion sensors can also be used to limit the time lighting is operational.

11.7.14. Landscaped areas and buffers will be provided around the site boundaries, in particular associated, including new wildlife habitat creation. Where new landscaped areas and buffers are included, these will be planted with native species including shrubs of wildlife value, along with wildflower grassland providing increased wildlife habitat provision, and managed in the long term to maximise habitat value.

11.8 RESIDUAL EFFECTS

11.8.1. Following implementation of the mitigation and enhancement measures set out above, all adverse construction and operational effects of the proposed development on ecological receptors are considered to be reduced to **non-significant levels**, whilst a number of positive effects have been identified in regard to individual ecological receptors, including the potential for a substantial net gain.

12

FLOODING AND DRAINAGE



12 FLOODING AND DRAINAGE

12.1 INTRODUCTION

- 12.1.1. This chapter of the ES has been prepared by Burrows Graham Limited and will assess the likely significant environmental impact of the proposed development on the water environment.
- 12.1.2. In particular, it considers the potential effects on surface and foul water drainage systems, water bodies and flood risk on site, in the vicinity of, and downstream of, the site during construction and the post construction phase of the development. It will consider the relevant legislation and water environmental policy context; the methods used, and details of criteria used to determine the significance.
- 12.1.3. This chapter is accompanied by a Flood Risk Assessment (FRA) and Drainage Strategy Report (Surface Water and Foul Water) (**Appendix 12.1 of Volume 3**).

12.2 POLICY CONTEXT

WATER FRAMEWORK DIRECTIVE (WFD)

- 12.2.1. The European Union Water Framework Directive (WFD) is set out to establish “good ecological and chemical status” in all surface waters and groundwaters. It promotes the use of sustainable practices. The WFD enables local planning authorities to enforce the control of pollution at source. The development proposals must not compromise the potential for delivering targets or actions set out in the River Basin Management Plans (RBMP).
- 12.2.2. River Basin Management Plans require that water quality and the pressures on water quality within main rivers, estuaries, coastal waters, reservoirs and groundwater are monitored. At the end of each cycle, each body of water is monitored for its chemical and biological quality and the Environment Agency (EA) assess the potential for improvements to be incorporated within the next cycle.

NATIONAL PLANNING POLICY FRAMEWORK (2021)

- 12.2.3. The National Planning Policy Framework (NPPF) sets out the government’s planning policies for England and how these are applied. It includes policies to ensure that the flood risk is considered at all stages in the planning process to avoid inappropriate development in areas of high risk, and therefore to direct development from these areas where possible. In exceptional circumstances, where the development is necessary in high risk areas, the policy aim is to make it safe, whilst reducing overall flood risk.
- 12.2.4. The NPPF uses risk based sequential testing to steer developments away from high risk areas to areas of low probability of flooding. It also matches the vulnerability of a proposed development to appropriate flood risk zones, for example, a more sensitive development would not be applicable within an area at high risk of flooding whereas a less sensitive development may be allowed.
- 12.2.5. The NPPF also includes details of how the effects of climate change can be accommodated within the design of the development. Further to this, the government’s policies on conserving and enhancing the natural environment are included in the NPPF, this guides the design of major new systems for pollution control and the management of contaminated land should be considered.

FLOOD AND WATER MANAGEMENT ACT (2010)

- 12.2.6. The Flood and Water Management Act (FWMA) advises on the implementation and management of sustainable drainage systems (SuDS), which via the planning process will need to be approved by a SuDS approval body.

BUILDING REGULATIONS (2010)

- 12.2.7. The building regulations requirements set out in part H3 stipulate that rainwater from roofs and paved areas is disposed of by, in order of priority; by infiltration, to watercourse or to a public sewer. The proposed surface water strategy has taken into account this where reasonably possible.

SEWERS FOR ADOPTION (8TH EDITION)

- 12.2.8. Sewers for Adoption (SfA) provides guidance on the design, construction and maintenance of sewers outside buildings in line with the adoption requirements of relevant waterboards.

CIRIA C753 – SUDS MANUAL (2015)

- 12.2.9. Sustainable drainage systems (SuDS) are described within this document and aim to deal with surface water runoff as close to the source as possible in order to replicate the natural environment and prevent flood risk downstream by reducing peak discharge from the site. It offers best practice guidance on the planning, design, construction and maintenance of SuDS.

WATER RESOURCES ACT (1991)

- 12.2.10. The Water Resources Act sets out the regulations and restrictions concerning water quality, pollution and flooding. The Environment Agency (EA) are assigned as the governing body for all matters concerning controlled waters and they have legal powers to prosecute for offences. It is an offence to knowingly permit poisonous, noxious or polluting matter or any solid waste into controlled waters. Controlled waters include all groundwater, watercourses, reservoirs, lakes and coastal waters.

REGIONAL POLICY & LOCAL

- 12.2.11. There are no specific relevant, adopted regional policies concerning the water quality and flood risks that deviate away from the approach outlined by the policies above. However, Warwickshire County Council (WCC) acting as the Lead Local Flood Authority (LLFA) will need to approval surface water drainage strategies associated with new developments and as such have prepared a Local Flood Risk Management Strategy (LFRMS) which sets out the strategy and approach to flood risk for all developments within the region. This document sits alongside the Warwickshire Strategic Flood Risk Assessment (SFRA) 2008, which provides information regarding flood risk within the area from all sources and details the council's flood risk policy:

- *Use the Sequential Test to locate new minerals and waste sites in least risky areas, giving highest priority to Flood Zone 1*
- *Use the Sequential Test to ensure compatibility between the Flood Zone and the vulnerability classification of the development*
- *Use the Sequential Test within development sites to inform site layout by locating the most vulnerable elements of a development in the lowest risk areas. For example, in instances where mineral workings are located in Flood Zones 3a and 3b, it is imperative that the site is designed in*

such a way as to enable any processing, storage and office accommodation to be located outside the high risk Flood Zones

- *Directing vulnerable development (such as waste management facilities for hazardous waste and installations requiring hazardous substances consent) away from flood affected areas*
- *Ensuring all new development is 'Safe', meaning that dry pedestrian access to and from the site is possible without passing through the 1 in 100 year plus climate change floodplain, and emergency vehicular access is possible*
- *Identify opportunities to restore completed sand and gravel workings to on-line storage areas, increasing the capacity of the floodplain and reducing flood risk to areas downstream of the site*
- *Promoting the use of SUDS in all Flood Zones on all new minerals and waste sites*

12.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

ASSESSMENT

- 12.3.1. This assessment will consider the potential effects of the proposed development on the water environment. This includes;
- Flood risk from all sources, both to the site and downstream
 - Water quality
 - Water supply
 - Sewer network capacity
- 12.3.2. Effects on the groundwater are assessed and reviewed within this chapter.
- 12.3.3. The proposed development has the potential to affect water quality within surface water bodies during construction or operation or by affecting changes to water quality variables such as temperature, base flow, sediment loads and turbidity, organic matter, pH and biological/chemical oxygen demand.
- 12.3.4. The proposed development has the potential to affect local hydrology and the volumes and direction of surface water runoff. The baseline hydrological features of the area include catchments, site topography and surface water flow paths. The assessment will focus on how the construction and operational phases of the proposed development might change these baseline features.
- 12.3.5. The proposed development has the potential to affect both the flood risk and hydrological regime at the site and flood risk to downstream receptors. Assessment of flood risk within the chapter is based on the findings of the accompanying Flood Risk Assessment and Drainage Strategy Report (**Appendix 12.1 of Volume 3**).

METHODOLOGY

- 12.3.6. The methodology for assessing the effect on the water environment is as follows:
- Establishment of the baseline conditions, identification and description of watercourses and standing water bodies, hydrogeology, geology, topography and existing utilities at the site, including sewerage and water supply infrastructure;
 - Establishment of potential sensitive receptors both within the baseline water environment (existing situation) and future potential receptors as a result of the proposed development in relation to the water environment;
 - Determination of the sensitivity of each receptor identified;

- Assessment of the effects from the construction and operational phases of the proposed development on the identified sensitive receptors;
- Identification of any necessary mitigation measures, if required; and
- Reference to the findings of the FRA (which has been carried out in accordance with the relevant policies to assess the effects of flood risk to the site).

SIGNIFICANCE CRITERIA

12.3.7. The sensitivity and impact magnitude of the proposed development needs to be considered for each relevant receptor in line with the policies for the water quality, flood risk and surface water.

Table 12-1 - Sensitivity of water quality, flood risk and surface water receptors

Receptor Sensitivity	Description
Very High	<p>Surface Water:</p> <p>Designated Salmonid / Cyprinid fishery, High WFD Ecological status, Good WFD Chemical status, Protected under EU or UK habitat legislation (e.g. Site of Special Scientific Interest, EA Water Protection Zone, Ramsar site)</p> <p>Groundwater:</p> <p>Principal aquifer providing a regionally important resource or supporting, Site protected under EU and UK habitat legislation, Source Protection Zone 1, Good WFD status</p> <p>Flood Risk:</p> <p>Flood Zone 3a and or 3b</p>
High	<p>Surface Water:</p> <p>Major Cyprinid fishery, Good WFD Ecological status, Good WFD Chemical status, Species protected under EU or UK habitat legislation</p> <p>Groundwater:</p> <p>Principal aquifer providing locally important resource or supporting river ecosystem, Source Protection Zone 2, Good WFD status</p> <p>Flood Risk:</p> <p>Flood Zone 2</p>
Medium	<p>Surface Water:</p> <p>Moderate WFD Ecological status, Good WFD Chemical status</p> <p>Groundwater:</p> <p>Secondary aquifer with limited connection to surface water, Good/Poor WFD status, Source Protection Zone 3</p> <p>Flood Risk:</p> <p>Flood Zone 2</p>
Low	<p>Surface Water:</p> <p>Poor/Bad WFD Ecological status, Poor WFD Chemical status</p> <p>Groundwater:</p>

	<p>Unproductive, poor WFD status</p> <p>Flood Risk:</p> <p>Flood Zone 1</p>
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Table 12-2 - Sensitivity of water quality, flood risk and surface water receptors

Receptor Sensitivity	Description
High	<p>The proposed development would cause a major change to existing environmental conditions, and WFD status.</p> <p>Either an acute and severe short-term change with the potential for long term secondary impacts; or permanent change to the baseline conditions.</p> <p>Impacts may be detectable over a large area.</p> <p>Activities that would cause a clear breach or fail of statutory policy or legislation.</p> <p>Major negative changes to WFD status.</p>
Medium	<p>The proposed development would cause a noticeable change to existing environmental conditions, and WFD status.</p> <p>A change to the baseline conditions that can occur over the short or long term.</p> <p>The impact may be contrary to guidance or objectives set by statutory or non-statutory stakeholders.</p>
Low	<p>Impacts are confined to the proposed development would cause a small change to existing environmental conditions, and WFD status.</p> <p>A measurable but temporary or small-scale effect to the water environment with no lasting effects of the proposed development.</p> <p>Although a detectable change has occurred, it is in line with the relevant policy and guidance.</p>
Negligible	<p>The proposed development would cause no discernible change to existing environmental conditions, and WFD status.</p> <p>No measurable change against the baseline.</p> <p>No change to WFD status.</p>

Table 12-3 – Significance Matrix

Receptor Sensitivity	Impact Magnitude			
	High	Medium	Low	Negligible
Very High	Major	Major	Moderate	Minor
High	Major	Moderate	Minor	Negligible

Medium	Moderate	Minor	Negligible	Negligible
Low	Minor	Negligible	Negligible	Negligible

12.4 BASELINE CONDITIONS

12.4.1. This section summarises the existing water environment conditions of the site and surrounding area. This includes the setting in relation to watercourse, surface water features, geological setting, hydrogeological setting, water resource and flood risk.

WATER ENVIRONMENT

12.4.2. The site is not located within close proximity to any watercourse or surface water features. The nearest water body is Kettle Brook which is located approximately 325m south west of the site across the M42, which ultimately connects to the Coventry Canal west of Tamworth.

GEOLOGY AND HYDROLOGY

12.4.3. The site is underlain by topsoil and then varieties of the Halesowen Formation, ranging from weathered clayey gravelly sands to rock strength sandstone.

12.4.4. Definitions for the aquifer types are provided below based on those provided by the EA website:

- Principal Aquifer: “layers of rock or drift deposits that have high intergranular and/ or fracture permeability – meaning they usually provide a high level of water storage. They may support water and/ or river base flow on a strategic scale.”
- Secondary A aquifer: “permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.”
- Secondary B aquifer: “predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non- aquifers.”
- Secondary ‘undifferentiated’ aquifer: “it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.”

12.4.5. The Halesowen Formation which underlies the site is designated a Secondary A aquifer, however there are no groundwater abstraction licenses within proximity to the site and the site is not in a Source Protection Zone.

12.4.6. Overall, the geology/hydrogeology underlying the site indicates permeability and therefore a medium sensitivity to environmental change and pollution.

FLOOD RISK

12.4.7. The flood risk for the development is considered in detail within the Flood Risk Assessment, however a brief summary is provided below.

12.4.8. The EA maps confirm the site is situated within Flood Zone 1, defined as having less than a 0.1% (1 in 1000 annual probability of tidal/fluvial flooding). As such, the tidal and fluvial flood risk is considered to be low.

- 12.4.9. The EA maps also show that some parts of the site are currently susceptible to a high risk of surface water flooding, this is primarily due to the current topography of the site and will therefore be reduced due to the proposed levels and drainage design. As such the risk of surface water flooding to the development is considered to be low.
- 12.4.10. There is no risk to any flooding from artificial sources to the site.

PUBLIC SEWERS

- 12.4.11. There are no public sewers within the site, the nearest foul and surface water sewers are to the west and east of the site adjacent to the M42 and Dordon respectively. Investigations are currently ongoing regarding the existing surface water sewers to the south of the site.

WATER RESOURCES

- 12.4.12. As confirmed in Chapter 9: Land and Soil there are no ground water abstraction licences in close proximity to the site, however the groundwater does have a high vulnerability risk factor due to the geology of the underlying material.

12.5 IDENTIFICATION AND VALUATION OF KEY IMPACTS (CONSTRUCTION AND OPERATIONAL)

KEY IMPACTS OF PROPOSED DEVELOPMENT

- 12.5.1. The key impacts of the development in relation to flooding, water resource and water quality are outlined below.
- 12.5.2. Due to the increased impermeable areas, the surface water runoff from the site will be managed and discharged at a restricted rate by the use of SuDS features in the form of a detention basin. Drainage networks and conveyance SuDS features will be designed to accommodate the 1 in 100 year rainfall event runoff with a 20% allowance for climate change and discharge this to SuDS features and then ultimately to the existing sewer network to the south of the site.
- 12.5.3. There will be a requirement to divert an existing culverted watercourse that runs across the development in a north-east to south-west direction as part of the works.
- 12.5.4. The foul flows will be conveyed to a private pumping station and discharged via a new rising main to the nearest Severn Trent Water foul infrastructure to the east of the site.

CONSTRUCTION PHASE

- 12.5.5. During the construction phase of the development there will be a number of activities that have the potential to impact the water environment.

Short Term Increase in Flood Risk Due to Construction Activities

- 12.5.6. Construction activities are likely to result in an increase in impervious areas due to the contractor's compound and haul routes, along with the construction of permanent structures. These will temporarily increase the surface water runoff which could increase the flood risk to the development and surrounding land.
- 12.5.7. There is an increased risk of blockages to the existing drainage system caused by construction materials which may also increase the flood risk.

12.5.8. Due to the nature of the earthworks requiring modifications to the existing flow paths of surface water drainage, there is the potential following extreme rainfall events for an increased risk to works, particularly in deep excavations which have the potential to fill with water. The modified flow paths could also result in an increase to the flood risk on and offsite due to an alteration to flow rates and volumes.

12.5.9. This is likely to have a **moderate significance** prior to mitigation measures.

Water Quality due to Accidental Spillages and Leaks

12.5.10. During this phase of the works, it will be necessary to store construction materials such as fuels, oils and other chemicals on the compound. There is therefore a risk of accidental spillage which could if left unmanaged enter the surface water or ground water features. This is likely to have a **moderate to major significance** prior to mitigation measures.

Physical Contamination such as Sediment and Silt following Ground Operations

12.5.11. During the construction phase there will be a major earthworks operation, whereby a number of activities will disturb the ground's original form, leading to the increase risk of sediment and silt entering the surface water system. These activities include;

- Considerable earthworks excavation, re-engineering of existing ground levels
- Excavation for drainage and foundations
- Installation of infrastructure and drainage
- Construction of the buildings
- Movement and use of plant and construction compound

12.5.12. Due to the vehicle movements during the construction phase the existing soil structure may be affected leading to suspended solids and silts within the surface water runoff. There is potential during heavy rainfall or increased wind speeds that this material could find its way to surface water features and reduce the water quality.

12.5.13. These activities if left unmitigated could result in sediments entering the surface water system and increase sediment loads leading to increased turbidity or blockages. This is likely to have a **moderate to major significance** prior to mitigation measures.

Short Term Alteration to Groundwater due to Construction Activities

12.5.14. During the site preparation and construction phase, short term alterations to groundwater flow and quality could occur due to the digging of temporary basins and other deep excavation (utilities, drainage etc). This is likely to have a **minor significance** prior to mitigation measures.

Water Supply

12.5.15. During the construction phase there is likely to be an increase in potable water supply to the development for sanitary facilities and site welfare but also for construction operations such as wash down areas and mixing concrete. The increase in demand is likely to be low and supply is expected to be provided by the existing Severn Trent infrastructure, subject to an application. There is a minor risk of damage to any existing water mains within the site due to construction activities.

12.5.16. There is unlikely to be an impact on the wider water resource network and this is likely to have a **minor significance** prior to mitigation measures.

Sewage Infrastructure

- 12.5.17. During the construction phase there will be an increase in surface water flows to the existing sewer, as such there is a risk of blockages, pollution and damage to this infrastructure. In particularly damage caused to the culverted watercourse running across the site during construction activities.
- 12.5.18. There will be a requirement for the disposal of foul sewage generated from the contractor's welfare facilities. This will either need to be collected and tankered away or disposed via the proposed permanent foul solution if feasible.
- 12.5.19. There is likely to be **minor significance** prior to mitigation.

OPERATIONAL PHASE

- 12.5.20. Once completed the operational phase of the proposed development has the following potential for long term impact on the water environment.

Increase in Flood Risk

- 12.5.21. Due to the increase in impermeable associated with the development there is potential for an increase in the flood risk to the site and downstream catchment. The mitigation for this has been set out within the Flood Risk Assessment and has been accommodated within the drainage strategy. This potential effect is therefore **insignificant** and will not be assessed further.

Accidental Spillages and Leaks

- 12.5.22. During the operational phase untreated runoff from leaks and spillages could find its way into the surface water network and contaminate the downstream network. The mitigation for this has been set out within the FRA (**Appendix 12.1 of Volume 3**) and is in line with current NPPF guidelines. This risk is therefore considered **insignificant** and will not be assessed further.

Physical Contamination such as Sediment and Silt

- 12.5.23. During the operational phase there is potential for physical contamination of the surface water system from silts and sediment associated with the runoff from the hard standing areas. The mitigation for this has been set out within the FRA and Drainage Strategy (**Appendix 12.1 of Volume 3**) and is in line with current NPPF guidelines. This risk is therefore considered **insignificant** and will not be assessed further.

Water Supply

- 12.5.24. There will be a requirement for an increased supply of water for the operational phase. At this stage it is unknown but based on this type of development the requirement for water is likely to be low and therefore it is likely to have **minor significance** prior to mitigation measures.

Sewage Infrastructure

- 12.5.25. There will be an increase in the foul flows from the development, at a worst case this will be 100% of the water supply. Based on the proposed development classification the overall foul flows are likely to be low and therefore has a **minor significance** prior to mitigation.

12.6 CUMULATIVE EFFECTS

- 12.6.1. This section reviews the assessment of effects of the proposed development in combination with effects from other proposed developments.

- 12.6.2. The water environment is covered by the NPPF as well as stringent local and national policies. As such every development site in proximity to the site will be subject to the same legislation. Therefore, there are no site specific impacts identified that can be considered as part of the cumulative assessment.

CONSTRUCTION PHASE

- 12.6.3. The measures required to mitigate the effects of this phase are covered within the mitigation section of this chapter. These measures typically form part of the Construction Environmental Management Plan (CEMP), which is a process adopted by other construction sites as best practice. Assuming these are implemented and appropriately management by the relevant authority the cumulative effect for the construction phase is considered to be **negligible**.

OPERATIONAL PHASE

- 12.6.4. The post mitigation scenario means that there are no cumulative effects to the water environment caused by the proposed development. The measures in place provide betterment on the existing scenario with regard to flood risk and water quality.

12.7 MITIGATION MEASURES

- 12.7.1. Through the adoption of best practice construction methods there are several measures that can be considered as embedded mitigation which will reduce the risk and likelihood that some potential impacts on water resources or flood risk would occur.
- 12.7.2. Best practice recommendations for the prevention of contamination will be outlined in more detail in the CEMP or equivalent in line with the Code of Construction Practice (CoCP) and agreed with statutory consultees prior to commencement of construction works. This will include measures to comply with relevant legislation and guidance, and best practice measures in line with the Considerate Contractors Scheme and Site Handbook for the Construction of SUDS (CIRIA C753).
- 12.7.3. All site works and ground works will be undertaken in accordance with the CEMP and relevant engineering specifications. These will include the following items as a minimum:
- Programme and phasing details of works;
 - A broad plan of site preparation and construction works, highlighting the various stages and their context within the project, including a full schedule of materials, manpower resources, and plant and equipment resources;
 - Detailed site layout arrangements, plans for storage, accommodation, vehicular movements, delivery and access;
 - Prohibition of restricted operations;
 - Details of plant used; and
 - Details of operations that are likely to result in disturbance, with an indication of the expected duration of each phase with key dates.

CONSTRUCTION PHASE

Short Term Increase in Flood Risk due to Construction Activities

- 12.7.4. The following measures should be used to mitigate the flood risk to the site during this phase:
- Effective site phasing and implementation of the drainage strategy to suit the ongoing construction works;

- Site Materials Management Plan (SMMP) to manage the movement of materials around the site in line with best practice construction guidelines and the CEMP; and
- Temporary drainage ditches and settlement ponds may be required to manage the surface water runoff during this phase until the permanent outfall is constructed.

Water Quality due to Accidental Spillages and Leaks

12.7.5. The following measures should be used to mitigate against spillages and leaks:

- Incident response plans and site toolbox talks to inform contractors of required actions in the event of pollution incidents;
- Spillages and leaks shall be immediately contained in line with the appropriate action plan;
- Where possible machinery shall be kept away from the drainage network and system;
- Use of a wheel wash to avoid tracking spillages onto and off the site during deliveries; and
- Care should be taken to ensure that best practice is adhered to for all construction movements around the site.

Physical Contamination such as Sediment and Silt following Ground Operations

12.7.6. The following measures should be used to mitigate against sediment and silt entering the drainage system:

- Work phasing shall be clearly defined to minimise the impact of disturbed soils;
- If ground contamination is encountered, work shall stop immediately, and measures taken to correctly identify any contamination and take appropriate action;
- Haul routes shall be clearly marked and wheel wash facilities in use;
- Dust management systems shall be implemented where required;
- Silt traps and sediment prevention systems shall be used, particular in the event of extreme weather conditions; and
- Environmental awareness training as required for workers.

Short Term Alteration to Groundwater due to Construction Activities

12.7.7. The following measures should be used to mitigate against any alterations to groundwater during construction:

- In the event groundwater is encountered, dewatering may be required. The most appropriate method will be chosen at this stage which may involve sheet piling in very deep excavations; and
- Water from excavations will require treating and disposal into the existing sewage networks.

OPERATIONAL PHASE

12.7.8. The following measures will be incorporated into the design of the proposed development and are considered best practice.

Increase in Flood Risk

12.7.9. To manage the flood risk associated with the proposed development, a surface water drainage strategy has been produced in line with the FRA and Drainage Strategy (**Appendix 12.1 of Volume 3**). This strategy is to be delivered in accordance with the national and local policies to ensure that the flood risk is not increased as a result.

12.7.10. The requirement for onsite storage will be provided in the form of an attenuation pond prior to discharge off the site at greenfield runoff rate.

Accidental Spillages and Leaks

12.7.11. Where the hardstanding areas have been identified as medium or high risk in line with the NPPF and SuDS guidance, the appropriate proprietary pollution control measures will be put in place in line with the proposed drainage strategy for the development. For example, petrol interceptors will be provided to treat the HGV yard areas prior to discharge into the attenuation pond.

Physical Contamination such as Sediment and Silt

12.7.12. In line the SuDS manual the required silt protection methods will be installed as listed in the drainage strategy report, such as catchpits, silt traps and filter drains. All drainage features shall be maintained in line with the typical maintenance regime included within the FRA and Drainage Strategy (**Appendix 12.1 of Volume 3**).

Water Supply

12.7.13. Severn Trent Water will be consulted on the increased potable water supply and will be required to confirm that this is acceptable within their network.

Sewage Infrastructure

12.7.14. Severn Trent Water will be consulted on the increased foul discharge and will be required to confirm that this is acceptable within their network.

12.8 RESIDUAL EFFECTS

CONSTRUCTION PHASE

Short Term Increase in Flood Risk due to Construction Activities

12.8.1. It is considered that providing the measures described above are implemented that the flood risk during construction will be mitigated. Following the implementation of such measures there is likely to be a **negligible significance** of this risk.

Water Quality due to Accidental Spillages and Leaks

12.8.2. It is considered that providing the measures described above are implemented that the risk of accidental spillages and leaks during construction will be mitigated. Following the implementation of such measures there is likely to be a **negligible significance** of this risk.

Physical Contamination such as Sediment and Silt following ground operations

12.8.3. It is considered that providing the measures described above are implemented that the risk of sediment and silt entering the surface water bodies during construction will be mitigated. Following the implementation of such measures there is likely to be a **negligible significance** of this risk.

Short Term Alteration to Groundwater due to Construction Activities

12.8.4. It is considered that providing the measures described above are implemented that the risk of contaminating the groundwater during construction will be mitigated. Following the implementation of such measures there is likely to be a **negligible significance** of this risk.

OPERATIONAL PHASE

12.8.5. It is considered that due to the appropriate design considerations outlined in the FRA and Drainage Strategy (**Appendix 12.1 of Volume 3**) there are no significant residual risks associated with:



- Flood risk;
- Physical Contamination due to sediment and silts; and
- Spillages and leaks.

Water Supply

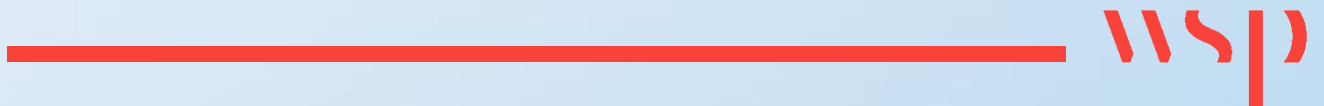
- 12.8.6. There is likely to be a long term, permanent effect of the proposed development due to the increased water supply, however, given the proposed usage this is likely to be of **negligible significance**.

Sewage Infrastructure

- 12.8.7. There is likely to be a long term, permanent effect of the proposed development due to the increased foul flows into the public sewer, however, given the proposed usage this is likely to be of **negligible significance**.

13

SOCIO-ECONOMICS



13 SOCIO-ECONOMICS

13.1 INTRODUCTION

- 13.1.1. This chapter, produced by WSP, reports the outcome of the assessment of likely significant effects arising from the proposed development on socio-economic receptors within the site and surrounding area.
- 13.1.2. The remainder of this chapter describes the assessment methodology and the baseline conditions relevant to the assessment, which have been used to reach these conclusions, as well as a summary of the likely significant effects leading to the additional mitigation measures required to avoid, prevent, reduce or, if possible, offset any likely significant adverse effects, and the likely residual effects and any required monitoring after these measures have been employed.
- 13.1.3. This chapter is supported by the following technical appendices:
- **Appendix 13.1 of Volume 3:** Assessment of baseline conditions.

13.2 POLICY CONTEXT

NATIONAL PLANNING POLICY FRAMEWORK (NPPF) (2021)

- 13.2.1. Paragraph 8 of the NPPF states that one of the overarching objectives of the planning system is an economic objective, to help build a strong, responsive and competitive economy.
- 13.2.2. Paragraph 81 states that significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development.
- 13.2.3. The need for planning decisions to recognise and address the specific locational requirements of different sectors is outlined at paragraph 83. This includes making provision for storage and distribution operations at a variety of scales and in suitably accessible locations.

NORTH WARWICKSHIRE LOCAL PLAN (2021)

- 13.2.4. Strategic Objective 3 of the Local Plan is to develop and grow the local economy for the benefit of local residents, which will be achieved in a range of ways, including providing new employment land.
- 13.2.5. Policy LP11 states that the delivery of employment generating uses should reflect the need to broaden the employment base, improve employment choices and opportunities for local people.

13.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

ASSESSMENT METHODOLOGY

Assessment of Baseline Conditions

- 13.3.1. In order to assess the socio-economic effects of the proposed development, WSP has identified and interpreted baseline information on a variety of socio-economic indicators. The indicators have been grouped into a number of subject areas. Taken together, these subject areas provide a robust indication of the socio-economic strengths and weaknesses of a local area.
- 13.3.2. WSP has obtained data on baseline socio-economic conditions from a variety of sources, including the 2011 Census, the National Online Manpower Information Service (NOMIS) and the Indices of

Multiple Deprivation for 2015 which allow consideration of socio-economic conditions at very small local areas known as lower layer super output areas (LSOAs).

13.3.3. The main thematic areas considered within the baseline assessment are as follows:

- Population and demographic change;
- Economic activity;
- Health conditions; and
- Deprivation and poverty.

13.3.4. The baseline assesses the economic and social conditions at a range of spatial scales (impact areas), and across different time periods, utilising the most up-to-date data at the time of the assessment.

Construction Phase

Temporary Construction Employment

- 13.3.5. The temporary demolition and construction employment benefits have been assessed based on the anticipated build cost for the proposed development provided by the Applicant.
- 13.3.6. Data from the Annual Business Survey 2018 Revised Results published in May 2020 (**Ref 13.1**) reveals that total turnover in the construction sector during 2018 was £287,717 million. The average number of people employed in the construction sector during 2018 was 1.53 million, suggesting that average turnover per full time equivalent construction job in 2018 was £188,050.
- 13.3.7. The temporary construction employment benefits have been assessed based on the anticipated build cost for the development proposals of £48 million to £53.2 million.
- 13.3.8. Using the build cost estimate and the average turnover per full time equivalent construction job in 2018 of £188,050, the number of person years of temporary construction employment has been estimated.

Gross Value Added (GVA) from Temporary Construction Employment

- 13.3.9. In order to estimate the gross value added by construction employment, the Annual Business Survey 2018 Revised Results provides estimates of the approximate GVA by different sectors of the UK economy. During 2018 the approximate GVA by the construction sector was £107,614 million.
- 13.3.10. With an average number of people employed in the construction sector during 2018 of 1.53 million, this suggests that the gross value added per full time equivalent construction job in 2018 was £70,336.

Complete and Operational Development

Gross, on Site Employment

- 13.3.11. The assessment of the likely future employment at the site has considered two different scenarios. The first scenario assesses the likely gross full-time equivalent (FTE) jobs that would be supported by the proposed development using the Homes and Communities Agency Employment Density Guide (Third Edition 2015) (**Ref 13.2**).
- 13.3.12. The proposed development includes the provision of commercial floorspace under Use Class E (which was introduced on 1 September 2020), for which there is no employment density provided in the Employment Density Guide (Third Edition 2015). As the Class E floorspace will be occupied by

light industrial space (formerly Class B1c, now Class E(g)(iii)), the employment density of 47 recommended in the Employment Density Guide (Third Edition 2015) for former Class B1c uses has been applied to the proposed Class E(g)(iii) floorspace.

- 13.3.13. The second scenario assesses the likely gross FTE jobs that would be supported by the proposed development using evidence from Birch Coppice Business Park; an operational business park close to the site (circa 550m south east of the site). The Officer's Report to the North Warwickshire Borough Council (NWBC) Planning and Development Board on 11 February 2013 for the Phase 3 proposals at Birch Coppice Business Park (**Ref 13.3**) states that Phases 1 and 2 of Birch Coppice Business Park have an employment density of 0.0011 jobs per sqft for Class B1/B2 floorspace and 0.002 for Class B8 floorspace. These densities have therefore been applied to the floorspace in the proposed development to provide an assessment of likely gross FTE jobs that would be supported by the proposed development based on local evidence.
- 13.3.14. The employment density of 0.0011 jobs per sqft for Class B1/B2 floorspace at Phases 1 and 2 of Birch Coppice Business Park has been applied to the proposed Class E(g)(iii) floorspace in the proposed development, as this floorspace would be used as light industrial space which was formerly Class B1c (prior to 1 September 2020).
- 13.3.15. The employment estimates derived from the two scenarios outlined above are then combined to provide an estimated gross, FTE on site employment range for the proposed development. This combined employment range is then used to estimate the net additional permanent employment.

Net Additional Employment

- 13.3.16. In order to calculate the net additional employment of the complete and operational proposed development, adjustments have been made for several factors which, when considered together, allow an assessment of the net additional jobs that will be generated as a result of the proposed development. The following adjustment factors have been considered:
- **Displacement effects** – would occur if some employees simply switch jobs from one location to another (and not within the proposed development);
 - **Leakage effects** – would occur if some of the jobs created by the proposed development are taken up by people living outside the wider impact area;
 - **An indirect multiplier effect** – is likely to create supply chain effects which would benefit local firms such as cleaning and maintenance contractors, training agencies and other suppliers of goods and services to the occupiers of the development. This effect is known as a **supply linkage multiplier**; and
 - **An induced multiplier effect** – is associated with increased expenditure in the local area by people deriving incomes from the direct and indirect effects of the scheme. The induced effects of the scheme would bring benefits to local shops and other service providers. This effect is known as a **consumption multiplier**.
- 13.3.17. In order to assess the amount of employment leakage at the local level, ONS 2011 Census travel to work data for North Warwickshire Borough and Tamworth Borough has been analysed (**Ref 13.4**), which indicates a leakage level of around 50% (a high level of leakage) across the two local authorities. A leakage level of 50% has therefore been assumed at the local level. The amount of employment leakage at the regional level was based on ready reckoner figures provided in the Additionality Guide (Fourth Edition, 2014) (**Ref 13.5**) and professional judgement. A low level of leakage (a percentage figure of 10%) was assumed at the regional level.

13.3.18. Displacement is the extent to which the benefits of the proposed development are offset by reductions of output or employment elsewhere. It is expected that there would be very low levels of displacement at the local level given the very strong demand for Class B8 sites in the North Warwickshire area and around the M42 more widely. The Additionality Guide (Fourth Edition, 2014) (**Ref 13.5**) suggests a ready reckoner of 25% where a low level of displacement is expected and 0% where no displacement is expected to occur. A mid-point figure of 10% has therefore been used to calculate the likely displacement at the local level, representing a very low level of displacement. A figure of 25% was used to calculate the likely displacement at the regional level, which is considered to be a low level of displacement, as set out in the Additionality Guide (Fourth Edition, 2014) (**Ref 13.5**).

13.3.19. Indirect and induced multipliers were used to measure the indirect and induced effects on employment of the complete and operational proposed development. Composite multipliers at the local and regional levels were used to assess the effect of both the indirect and induced multipliers. A multiplier of 1.4 has been used at the local level, based on guidance in The Green Book (2020), published by HM Treasury (**Ref 13.6**). A multiplier of 1.5 has been used at the regional level, which represents a mid-range multiplier based on ready reckoner values provided in the Additionality Guide (Fourth Edition, 2014) (**Ref 13.5**). The indirect employment effects generated by the completed proposed development include employment growth as a result of the purchase of goods and services by employees and businesses in the proposed development.

13.3.20. The following formula has been used to assess the net additional employment generated by the proposed development:

$$\text{Gross on-site jobs} \times (1 - \text{displacement}) \times (1 - \text{substitution}) \times (1 - \text{leakage}) \times \text{Multiplier} = \text{net additional jobs}$$

13.3.21. The assumptions used to calculate the net additional permanent employment are summarised in **Table 13-1**. To demonstrate the wider impacts of the proposed development, assumptions have been made based at both the local level (North Warwickshire Borough and Tamworth Borough) and at a regional level (the West Midlands).

Table 13-1 – Assumptions used to calculate net additional permanent employment

	Local level (North Warwickshire Borough and Tamworth Borough)	Regional level (West Midlands)
Leakage	50% ONS 2011 Census travel to work data for North Warwickshire and Tamworth indicates a leakage level of around 50% (a high level of leakage) (Ref 13.4). A leakage level of 50% has therefore been assumed at the local level.	10% A low level of leakage has been assumed at the regional level, based on ready reckoner figures provided in the Additionality Guide (13.5) and professional judgement
Displacement	10% It is expected that there would be very low levels of displacement at the local level given the very strong demand for Class B8 sites in the North Warwickshire area and	25% A figure of 25% was used to calculate the likely displacement at the regional level, which is considered to be a low level of

	around the M42 more widely. A figure of 10% was therefore used to calculate the likely displacement at the local level.	displacement, as set out in the Additionality Guide (Ref 13.5).
Substitution	<p style="text-align: center;">0%</p> <p>It is not considered likely that the proposed development will be substituting employment activities for other activities. Therefore, this has been considered to be negligible.</p>	<p style="text-align: center;">0%</p> <p>It is not considered likely that will be substituting employment activities for other activities. Therefore, this has been considered to be negligible.</p>
Multiplier	<p style="text-align: center;">1.4</p> <p>A multiplier of 1.4 has been used at the local level, based on guidance in The Green Book (2020), published by HM Treasury (Ref 13.6).</p>	<p style="text-align: center;">1.5</p> <p>A multiplier of 1.5 has been used at the regional level, which represents a mid-range multiplier based on ready reckoner values provided in the Additionality Guide (Fourth Edition, 2014) (Ref 13.5).</p>

GVA from Net Additional Employment

- 13.3.22. In order to estimate the annual GVA created by the net additional employment generated by the completed proposed development, information from the Office for National Statistics (2021) Sub-regional Productivity tables (Ref 13.7) has been used.
- 13.3.23. Detailed information on GVA per filled job is provided by the Office for National Statistics Regional Economic Analysis Sub-Regional Productivity Tables. Table B3 reveals that the GVA per filled job for the West Midlands region was £50,083 in 2019. This figure has been used to estimate the GVA from net additional employment associated with the proposed development at both the local and regional levels.
- 13.3.24. This analysis does not provide GVA per filled job by industry sector. The GVA per filled job for the West Midlands of £50,083 in 2019 covers all sectors. This means that it will slightly overstate the GVA for storage and distribution based employment which will typically be lower than the values for manufacturing industries. Nevertheless, the proposed development will still make a significant positive contribution to the GVA in the local and regional economies.

SIGNIFICANCE CRITERIA

- 13.3.25. The socio-economic effects identified in this chapter have been categorised as adverse or beneficial depending on their expected effect. The identified effects have then been evaluated against four main criteria, drawing on the evaluation criteria typically used in environmental impact assessment.
- 13.3.26. The evaluation criteria used in this chapter are as follows:
- **Scale of the effect** – this includes the magnitude and likely severity of the impact;
 - **Permanence of the effect** – this distinguishes between temporary impacts and those that will continue to have an effect in the long run;
 - **Importance of the effect** – to the affected communities in the impact area; and
 - **Compatibility of the effect** – with the outcomes sought by relevant regeneration and economic development policies.

13.3.27. The significance of the identified socio-economic effects has been assessed by considering both the magnitude of the impact and the sensitivity of the receptor. **Table 13-2** below shows the range of potential assessments for the significance of socio-economic effects.

Table 13-2 - Assessing the significance of socio-economic effects

Magnitude	Sensitivity		
	High	Moderate	Low
Major	Major Adverse / Beneficial	Major – Moderate Adverse / Beneficial	Moderate – Minor Adverse / Beneficial
Moderate	Major – Moderate Adverse / Beneficial	Moderate – Minor Adverse / Beneficial	Minor Adverse / Beneficial
Minor	Moderate – Minor Adverse / Beneficial	Minor Adverse / Beneficial	Minor – Negligible
Negligible	Negligible	Negligible	Negligible

7.1. The geographical extent of an effect considers the appropriate policy / administrative boundary or geographical area of influence within which an effect occurs and is assessed at the following spatial scales:

- **Local:** the administrative boundaries of NWBC and Tamworth Borough Council; and
- **Regional:** West Midlands.

13.4 BASELINE CONDITIONS

13.4.1. An in-depth baseline analysis has been provided in **Appendix 13.1 (Volume 3)** The key findings from the baseline assessment are summarised below:

- **Population** – Dordon ward and Tamworth have a very similar age breakdown to England and Wales as a whole, whereas North Warwickshire has a higher proportion of older people (aged 65+) than the local and national comparisons.
- **Economic Activity** – In general, economic activity levels are lower at ward level than regional level, but higher than national level. The proportion of the working age resident population who were claiming out of work benefits in Dordon ward was higher than the rates for North Warwickshire and Great Britain as a whole, but lower than the rates in Tamworth.
- **Employment Structure** – The proportion of people employed in higher skilled occupations in Dordon ward was notably lower than the comparative figures for North Warwickshire, Tamworth and England and Wales as a whole.
- **Education** – At the ward level, the proportion of people with no qualifications was higher than the rates across North Warwickshire and Tamworth and across the country as a whole. Concurrently, the proportion of residents within Dordon ward with higher level qualifications was significantly lower than North Warwickshire, Tamworth and England and Wales averages.
- **Health** – Male and female life expectancy at birth (for the period 2017-2019) were lower in North Warwickshire and Tamworth than England.

- **Deprivation** – The neighbourhood impact area (North Warwickshire 002B) is ranked among the 50% most deprived areas in England. The LSOA is ranked in the 30% most deprived across the living environment and education, skills and training domains. Overall, the area has average levels of deprivation.

13.5 ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION AND RESIDUAL EFFECTS

CONSTRUCTION PHASE - TEMPORARY SOCIO-ECONOMIC EFFECTS

Construction Employment

- 13.5.1. The UK construction sector is characterised by an extensive network of supply chains and contracting relationships covering a very wide range of trades and skills. As a result, the spin off benefits from new construction projects are greater than for many other economic sectors in the UK.
- 13.5.2. The proposed development would include a significant construction period (approximately 2 years) which would generate turnover and temporary employment for construction firms and related trades, as well as construction training opportunities.
- 13.5.3. There will be opportunities to provide training, apprenticeships and work experience in a range of construction trades. For example, there will be opportunities for local young people to gain NVQ Level 2 and Level 3 training and practical experience in a range of different construction and engineering trades and HGV driver (theory) training. Initiatives of this sort are typically run by a training provider in partnership with the main contractor for the construction programme.
- 13.5.4. It is estimated that the development would generate 255 to 283 person years of temporary construction employment. This is equivalent to 255 to 283 construction workers being employed on a full-time basis for twelve months.
- 13.5.5. The construction employment been assessed as a direct, temporary, medium-term, **moderate beneficial** effect at the **local level** and a **minor beneficial** effect at the **regional level**.

Gross Value Added by Construction Employment

- 13.5.6. Based on gross value added per full time equivalent construction job in 2018 of £70,336, it is estimated that the 255 to 283 years of temporary construction employment generated by the development will create gross value added to the regional economy of around £17.9 million to £19.9 million.
- 13.5.7. The GVA from construction employment been assessed as a direct, temporary, medium-term **moderate beneficial** effect at the **local level** and a **minor beneficial** effect at the **regional level**.

OPERATIONAL PHASE – PERMANENT SOCIO-ECONOMIC EFFECTS

Gross, On Site Employment

- 13.5.8. The proposed development comprises commercial uses that would generate employment at the site. As outlined in the Assessment Methodology, the approach to assessing likely gross, on site employment in this chapter is twofold; considering the likely gross FTE jobs based on evidence from the Employment Density Guide (Third Edition 2015) (**Ref 13.2**); and also through using evidence from the operational Phases 1 and 2 of the nearby Birch Coppice Business Park.

Gross, On Site Employment based on evidence from the Employment Density Guide (Third Edition 2015)

13.5.9. This section assesses the likely gross, on site employment at the Proposed Development based on evidence in the Employment Density Guide (Third Edition 2015).

Table 13-3 - Gross, on site employment using the Employment Density Guide

Use Class / Operation	Proposed Floorspace (GIA sqm)	Proposed Floorspace (GEA sqm)*	Proposed Floorspace (NIA sqm)**	Full-time Equivalent Jobs	Comments and Assumptions
Class B8 / logistics	90,000	94,737	-	997 to 1,353	Employment density of 70 to 95 based on GEA. This density relates to Class B8 (national distribution centre, regional distribution centre, or 'final mile' distribution centre).
Class E(g)(iii) / light industrial	5,000	-	4,500	96	Employment density of 47 based on NIA.
Class B2 / industrial	5,000	-	-	139	Employment density of 36 based on GIA.
Total				1,232 to 1,588	

Note: Number of full-time equivalent jobs have been rounded where necessary.

* The Employment Density Guide (Third Edition, 2015) states that GIA is typically 5% lower than GEA. The GEA has therefore been calculated on this basis.

** NIA has been calculated as 90% of GIA, as recommended by the Employment Density Guide (Third Edition, 2015).

13.5.10. **Table 13-3** reflects the following assumptions:

- **Employment density** – evidence provided by the Employment Density Guide (Third Edition 2015) has been used. Employment density refers to the average floor space in sqm per FTE job. Employment density describes the intensity of use within a building and is an indicator of the amount of space typically occupied by one person in a commercial building;
- **Use Class B8** – the proposed development includes the provision of Class B8 storage and distribution floorspace (a minimum of 90% of the total proposed floorspace). It has been assumed that 90% of the floorspace (968,752 sqft) would be in Class B8 use. As the type of storage and distribution facility is currently unknown, a range of employment densities have been applied to the proposed Class B8 floorspace, as recommended in the Employment Density Guide (Third Edition, 2015): 95 (national distribution centre) and 70 ('final mile' distribution centre);
- **Use Class E** – up to 10% of the total floorspace in the proposed development would be in Class E(g)(iii) and Class B2 use. It has therefore been assumed that 5% of the floorspace (5,000 sqm) would be in Class E(g)(iii) use as light industrial space. There is no employment density provided in the Employment Density Guide (Third Edition 2015) for operations under Class E(g)(iii) (which was introduced on 1 September 2020). As the Class E(g)(iii) floorspace will be occupied by light

industrial space (formerly Class B1c), the employment density of 47 recommended in the Employment Density Guide (Third Edition 2015) for Class B1c uses has been applied to the proposed Class E(g)(iii) floorspace; and

- **Use Class B2** – up to 10% of the total floorspace in the proposed development would be in Class E and Class B2 use. It has therefore been assumed that 5% of the floorspace (5,000 sqm) would be in Class B2 use. The employment density of 36 has been applied to the proposed Class B2 floorspace, as recommended by the Employment Density Guide (Third Edition 2015).

13.5.11. Based on evidence from the Employment Density Guide (Third Edition 2015) and as outlined in **Table 13-3**, the proposed development could generate an estimated 1,232 to 1,588 FTE gross, on site jobs.

Gross, On Site Employment based on evidence from Birch Coppice Business Park Phases 1 and 2

13.5.12. This section assesses the likely gross, on site employment at the proposed development based on evidence from Phases 1 and 2 of the nearby Birch Coppice Business Park.

Table 13-4 – Gross, on site employment using evidence from Birch Coppice Phases 1 and 2

Use Class / Operation	Proposed Floorspace (sqft)	Jobs per sqft	Full-time Equivalent Jobs	Comments and Assumptions
Class B8 / logistics*	968,752	0.002	1,938	Based on the employment density of 0.002 for Class B8 floorspace at Birch Coppice Business Park Phases 1 and 2.
Class E / light industrial **	53,820	0.0011	59	Based on the employment density of 0.0011 for former Class B1/B2 floorspace at Birch Coppice Business Park Phases 1 and 2.
Class B2 / industrial**	53,820	0.0011	59	Based on the employment density of 0.0011 for former Class B1/B2 floorspace at Birch Coppice Business Park Phases 1 and 2.
Total			2,056	

* 90% of the total proposed 1,076,391 sqft would be in Class B8 use.
 ** 5% of the total proposed 1,076,391 sqft would be in Class B2 and Class E(g)(iii).

13.5.13. **Table 13-4** reflects the following assumptions:

- **Use Class B8** – the proposed development includes the provision of Class B8 storage and distribution floorspace (a minimum of 90% of the total proposed floorspace). It has been assumed that 90% of the floorspace (968,752 sqft) would be in Class B8 use. The employment density of 0.002 jobs per sqft (based on evidence from Birch Coppice Business Park Phases 1 and 2) has therefore been applied to this floorspace;
- **Use Class B2** – up to 10% of the total floorspace in the proposed development would be in Class E(g)(iii) and Class B2 use. It has therefore been assumed that 5% of the floorspace (53,820 sqft) would be in Class B2 use. The employment density of 0.0011 jobs per sqft (based on evidence

from Birch Coppice Business Park Phases 1 and 2) has therefore been applied to this floorspace; and

- **Use Class E(g)(iii)** – up to 10% of the total floorspace in the proposed development would be in Class E(g)(iii) and Class B2 use. It has therefore been assumed that 5% of the floorspace (53,820 sqft) would be in Class E(g)(iii) use, as light industrial. The employment density of 0.0011 jobs per sqft (based on evidence from Birch Coppice Business Park Phases 1 and 2) has therefore been applied to this floorspace.

13.5.14. Based on evidence from Phases 1 and 2 of Birch Coppice Business Park, and as outlined in **Table 13-4**, the proposed development could generate an estimated 2,056 FTE gross, on site jobs.

Gross, On Site Employment at the Proposed Development

13.5.15. Based on evidence from the Employment Density Guide (Third Edition 2015) and evidence from Phases 1 and 2 of Birch Coppice Business Park, the proposed development would generate an estimated 1,232 to 2,056 FTE gross, on site jobs.

Net Additional Employment

13.5.16. Given that the site does not currently support any employment, the 1,232 to 2,056 FTE jobs that would be created by the development once complete and operational represent a gross employment figure.

13.5.17. Based on the assumptions outlined in **Table 13-1**, the net additional permanent jobs arising from the proposed development is detailed in **Table 13-5** below.

Table 13-5 – Additionality of permanent employment

Step involved	North Warwickshire Borough and Tamworth Borough	West Midlands
1. Operational workers (gross, direct)	1,232 to 2,056	
2. Leakage to workers from outside impact area	-616 to -1,028	-123 to -206
3. Displacement of other activities	-62 to -103	-277 to -463
4. Operational workers on-site (net, direct)	554 to 925	832 to 1,387
5. Employment off-site induced by operational employment (net, indirect)	222 to 370	416 to 694
6. Total additional employment from operation of proposed development	776 to 1,295	1,248 to 2,081

13.5.18. As outlined in **Table 13-5**, whilst the proposed development will provide an estimated 1,232 to 2,056 gross jobs on site, this will be supported by up to 370 permanent jobs in the supply chain at the local level and up to 694 permanent jobs at the regional level.

13.5.19. Allowing for displacement, leakage and multiplier effects, it is estimated that the proposed development would create 776 to 1,295 FTE net additional jobs at the local level, with an additional 471 to 786 FTE jobs at the regional level. Taken together, the proposed development could support up to 2,081 FTE permanent jobs.

13.5.20. There is likely to be a direct, permanent, long-term, **major beneficial** effect at the **local level** and a **moderate beneficial** effect at the **regional level** from the net additional employment.

Gross Value Added

13.5.21. The net additional employment created by the development will have wider economic effects by generating GVA to the local economy.

13.5.22. It is estimated that the jobs supported by both the proposed development and supply chain linkages could contribute approximate GVA to the West Midlands economy of up to £62.5 million to £104.2 million annually in perpetuity, £38.9 million to £64.9 million of which would be within the local (North Warwickshire Borough and Tamworth Borough) economy (based on 776 to 1,295 FTE net additional jobs identified in **Table 13-5**).

13.5.23. There is likely to be a direct, permanent, long-term, **major beneficial** effect at the **local level** and a **moderate beneficial** effect at the **regional level** from the GVA created by the net additional permanent employment.

CUMULATIVE EFFECTS

13.5.24. In terms of socio-economics, as the proposed development has only identified positive impacts, any cumulative impacts arising in relation to the cumulative developments would be positive in nature.

MITIGATION MEASURES

13.5.25. All of the socio-economic effects identified in this chapter are anticipated to be beneficial and, as such, no mitigation measures are proposed.

RESIDUAL EFFECTS

13.5.26. The following residual effects have been identified:

- There is likely to be a direct, temporary, medium-term **moderate beneficial** effect at the **local level** and a **minor beneficial** effect at the **regional level** from the construction employment;
- There is likely to be a direct, temporary, medium-term **moderate beneficial** effect at the **local level** and a **minor beneficial** effect at the **regional level** from the GVA from construction employment;
- There is likely to be a direct, permanent, long-term, **major beneficial** effect at the **local level** and a **moderate beneficial** effect at the **regional level** from the net additional employment; and
- There is likely to be a direct, permanent, long-term, **major beneficial** effect at the **local level** and a **moderate beneficial** effect at the **regional level** from the GVA created by the net additional permanent employment.

13.5.27. **Table 13-6** outlines the residual effects associated with the proposed development.

Table 13-6 – Residual effects

Receptor	Receptor sensitivity	Residual effect	D/I	P/T	R/IR	ST/MT/LT
Construction Phase						
North Warwickshire and Tamworth labour market	Moderate	Moderate beneficial	D	T	IR	MT
West Midlands regional labour market	Low	Minor beneficial	D	T	IR	MT
North Warwickshire and Tamworth economy	Moderate	Moderate beneficial	D	T	IR	MT
West Midlands regional economy	Low	Minor beneficial	D	T	IR	MT
Operational Phase						
North Warwickshire and Tamworth labour market	Moderate	Major beneficial	D	P	R	LT
West Midlands regional labour market	Low	Moderate beneficial	D	P	R	LT
North Warwickshire and Tamworth economy	Moderate	Major beneficial	D	P	R	LT
West Midlands regional economy	Low	Moderate beneficial	D	P	R	LT

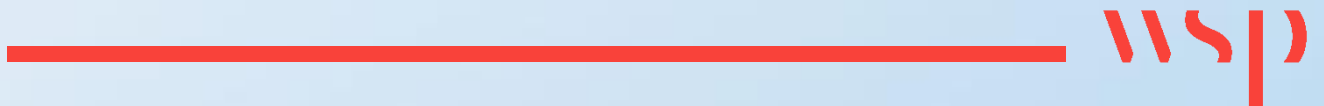
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14

**CULTURAL HERITAGE AND
ARCHAEOLOGY**



14 CULTURAL HERITAGE AND ARCHAEOLOGY

14.1 INTRODUCTION

- 14.1.1. This Chapter is intended to be read as part of the wider ES, with particular reference to the introductory chapters (**Chapters 1–5**) and is supported by a Historic Environment Desk Based Assessment (HEDBA) (**Appendix 14.1 of ES Volume 3**), Geophysical Survey Report (**Appendix 14.2 of ES Volume 3**) and the Written Scheme of Investigation for an Archaeological Trial Trench Evaluation (**Appendix 14.3 of ES Volume 3**).
- 14.1.2. It reports the outcome of the assessment of likely significant environmental effects arising from the proposed development upon the Cultural Heritage and Archaeology (the Historic Environment). The focus of the assessment is on buried heritage assets (archaeological remains) and above ground heritage assets (buildings, structures, monuments and areas of heritage interest); the latter includes the historic character and setting of designated heritage assets.
- 14.1.3. Furthermore, this chapter describes the assessment methodology, the baseline conditions at the site and in the surrounding area and provides a summary of the likely significant environmental effects arising from the proposed development. It outlines mitigation measures required to prevent, reduce or off-set any significant negative environmental effects, and reports on the likely residual effects after these measures have been employed.

14.2 POLICY CONTEXT

RELEVANT LEGISLATION

Listed Buildings

- 14.2.1. There are no listed buildings located within the site. Five listed buildings are located within 1km, the closest lying 750m to the south east. *The Planning (Listed Buildings and Conservation Areas) Act 1990* (**Ref. 14.1**) sets out the legal requirements for the control of development and alterations which affect listed buildings and conservation areas.
- 14.2.2. Section 1 of the Act defines a ‘listed building’ as:
- ‘a building which is for the time being included in a list compiled or approved by the Secretary of State under that section. For the purpose of the Act any object or structure fixed to the building, which, since on or before 1 July 1948, has formed part of the land and is comprised within the curtilage of the building is treated as part of the building. ‘Building’ is defined as including any structure or erection and any part of a building’.*
- 14.2.3. Any decisions relating to works to Listed Buildings and development within their settings and development within conservation areas must address the statutory considerations of the *Planning (Listed Buildings and Conservation Areas) Act 1990*. The key elements of this Act relevant to this assessment are outlined below.
- 14.2.4. Section 66 places a responsibility upon the decision maker in determining applications for planning permission for a development that affects a listed building or its setting to have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses; and Section 72 of the Act places a duty upon the decision maker in

determining applications for planning permission within conservation areas to pay special attention to the desirability of preserving or enhancing the character or appearance of that area.

NATIONAL PLANNING POLICY FRAMEWORK

- 14.2.5. Planning policy relevant to the historic environment is outlined below; the detailed policies are provided in **Appendix 14.1 of ES Volume 3**.
- 14.2.6. At a national level Section 16 of the National Planning Policy Framework⁴⁹ (NPPF) deals with 'Conserving and Enhancing the Historic Environment' (**Ref. 14.2**). The NPPF recognises that heritage assets are an irreplaceable resource which 'should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations' (paragraph 189).
- 14.2.7. The NPPF requires the significance of heritage assets to be considered in the planning process, whether designated or not. The NPPF also sets out the test in relation to 'substantial' and 'less than substantial' harm (paragraph 194 to paragraph 202).
- 14.2.8. The web-based National Planning Policy Guidance⁵⁰ (**Ref. 14.3**) provides supporting information in respect of conserving and enhancing the historic environment.

LOCAL PLANNING POLICY

- 14.2.9. The North Warwickshire Local Plan (**Ref. 14.4**) was adopted on 29 September 2021.
- 14.2.10. Policy LP15 (Historic Environment) recognises the contribution of the historic environment to shaping the distinctiveness of the Borough, its contribution to quality of life and place as well as acknowledging it as a finite and non-renewable resource. NWBC commits to protecting and where possible enhancing heritage assets and recognises that development may need to be limited in order to conserve or protect the historic environment from inappropriate proposals.

GUIDANCE

- 14.2.11. The guidance used during the preparation of this chapter is summarised as follows.
- Chartered Institute for Archaeologists (CIfA) 2014, *Standard and Guidance for Historic Environment Desk-based Assessment* (**Ref. 14.5**);
 - Historic England, 2017, *Conservation Principles, Policies and Guidance Consultation Draft* (**Ref. 14.6**).
 - Historic England, 2017, *The Setting of Heritage Assets, Historic Environment Good Practice in Planning: Note 3, Second Edition* (**Ref. 14.7**);
 - Historic England, 2019 *Statements of Heritage Significance: Historic England Advice Note 12* (**Ref 14.8**)

49 Ministry for Housing, Communities and Local Government (2021), National Planning Policy Framework.

50 Ministry for Housing, Communities and Local Government (2019), National Planning Policy Guidance Historic Environment

14.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

LIKELY SIGNIFICANT EFFECTS

14.3.1. The following impacts have been identified and the resulting environment effect assessed in this chapter:

Demolition and Construction Stage

- Partial or complete loss of buried heritage assets in areas where ground disturbance is proposed;

Operational Stage

- Permanent change to the setting of selected designated heritage assets within the study area around the site.

INSIGNIFICANT EFFECTS

14.3.2. The following effects are considered insignificant and have been scoped out of this ES Chapter:

- **Construction effects on the setting of designated heritage assets over 100m from the site boundary.** An assessment of demolition and construction effects on designated heritage assets beyond the immediate vicinity of the site (>100m) has been scoped out on the basis that there is unlikely to be a significant temporary effect from dust, noise and vibration and artificial lighting due to the distance between the works and these assets.
- **Operational effects on buried heritage assets.** An assessment of operational effects on buried heritage assets have been scoped out on the basis that, once the proposed development has been completed, no further ground disturbance will occur as part of the proposed development. As such, effects on the buried archaeological resource are 'scoped out' of further consideration within this chapter.
- **Operational effects on the setting of designated above ground heritage assets, where they are considered insignificant.** The scope will only include those assets that may be subject to a 'significant' change to their setting in accordance with the stepped approach set out in Historic England's *The Setting of Heritage Assets (Ref. 14.7)*. Those assets scoped out on this basis are listed in Table 14.1.
- **Cumulative effects and buried heritage assets.** This has been scoped out. Cumulative effects are 'elevated' effects which occur where the combined effect of the proposed development with other proposed schemes in the vicinity, on a discrete and significant shared buried heritage asset, is more severe than that reported at the proposed development site. This is on the basis that for intangible and deeply buried heritage assets it is not feasible to quantify accurately the nature of the resource across the study area, which would enable the identification of a cumulative impact and potential elevated effect.

14.3.3. A number of factors have been considered in determining whether or not the effects of the proposed development are likely to be insignificant or otherwise on built heritage assets or the contribution of setting to the significance of heritage assets. These include:

- Direct physical effects to a built heritage asset resulting in substantial harm to their 'heritage significance' as a result of alteration, partial demolition or loss;
- The nature and scale of proposed development;
- The fact that the greater the distance a built heritage asset is from the site, the more diminished the visual effects is likely to be;

- The location and position of intervening development, infrastructure, vegetation and landscape features; and
- The location and direction of key views likely to contribute meaningfully to a particular asset's significance.

14.3.4. **Table 14.1** below lists those designated heritage assets which have been scoped out of further assessment as the proposed development is not anticipated to result in a significant effect under EIA regulations.

Table 14.1 - Built Heritage Assets Scoped out of Further Assessment

Asset name	Designation	Reason for Scoping Out
Freasley Hall	Listed Grade II	<p>The Listed Building is set within private grounds, 830m south west of the site. The settings comprise cottages to the west and fields to the north, east and west. Located between the Listed Building and the site is a collection of industrial warehouses (St Modwen Park Tamworth) and Watling Street (A5 road), which creates a physical division between the Site and the Listed Building thereby diminishing understanding and experience of any associations between them or intervening views. Additionally, the proximity of the M42 motorway has resulted in the loss of the tranquil setting, formerly associated with the setting of the Freasley Hall.</p> <p>Therefore, it is determined that the site does not contribute to the setting or significance of the Listed Building.</p> <p>Therefore, development within the site would not affect the Listed Building.</p>
Garden Wall and Gatepiers approximately 1 metre south of Freasley Hall	Listed Grade II	<p>The garden wall and gatepiers are contemporary to Freasley Hall and form part of its setting. The setting of the garden wall and gatepiers is based Freasley Hall and drive leading from the west to the house.</p> <p>Due to distance and the nature of the garden wall and gatepiers, it was determined that the Site does not contribute to their setting and the proposed development would not impact the significance of the Listed Building.</p>
Sycamore Cottage	Listed Grade II	<p>Sycamore Cottage is a 17th century dwelling located within private grounds and surrounded by other dwellings, 860m south west of the site.</p> <p>Due to distance it was determined that the Site does not contribute to its setting and that the development would not impact the significance of the Listed Building. Additionally, the proximity of the M42 motorway has resulted in the loss of the historic tranquil setting associated with Sycamore Cottage as a rural dwelling. Therefore, the setting of the Yew House has already been considerably altered.</p>
Yew House	Listed Grade II	<p>Yew House is a 17th century cottage set within private grounds and surrounded by other dwellings, located 930m south west of the site.</p> <p>Due to the distance it was determined that the site does not contribute to its setting and would therefore not impact its</p>

Asset name	Designation	Reason for Scoping Out
		<p>significance.</p> <p>Additionally, the proximity of the M42 motorway has resulted in the loss of the historic tranquil setting associated with Yew House as a rural dwelling. Therefore, the setting of the Yew House has already been considerably altered.</p>

LIMITATIONS AND ASSUMPTIONS

- 14.3.5. The main limitation to the assessment is the nature of the archaeological resource - buried and not visible - which means it can be difficult to predict the presence and likely significance of buried assets accurately, and consequently the impact upon them, based primarily on a desk-based sources. The principle sources of information is the Historic Environment Record (HER), which list all known archaeological sites and finds. The information provides an initial indication of archaeological potential rather than a definitive list of all potential buried heritage assets, because the full extent of a buried heritage resource cannot be known prior to site-specific archaeological field investigation.
- 14.3.6. Notwithstanding this limitation, the methodology is robust, utilising reasonably available information, and conforms to the requirements of local and national guidance and planning policy. Typically, appropriate standard archaeological prospection and evaluation techniques are utilised to reduce the uncertainties inherent in any desk-based assessment, as part of an overall EIA mitigation strategy.

METHOD OF BASELINE DATA COLLECTION

Extent of Study Area

- 14.3.7. In order to determine the full historic environment potential of the site, a broad range of standard sources were consulted, including documentary and cartographic sources and the results from any archaeological investigations within the site and an inner 500m radius study area around it. This information was examined in order to determine the likely nature, extent, preservation and significance of any known or possible buried heritage assets that may be present within or adjacent to the site.
- 14.3.8. For the assessment of the possible effect on the setting of designated assets an outer study area of 1km from the site boundary was considered.
- 14.3.9. The study areas are considered through professional judgement to be appropriate to characterise the historic environment of the site and surrounding area. Where appropriate, there may be reference to assets beyond these study areas, e.g., where such assets are particularly significant and / or where they contribute to current understanding of the historic environment. This is highlighted, where appropriate, within this chapter.

Desk-Based Assessment

- 14.3.10. **Appendix 14.1 of ES Volume 3** provides a desk-based study and includes a review of available information to determine the baseline conditions in the site and surrounding study area. This assessment consisted of an analysis of existing written, graphic, photographic, electronic

information and a site walkover, in order to identify the likely heritage assets within the site and wider study area, and determine their significance. The following data sources have been reviewed:

- The National Heritage List for England (NHLE) for details of designated heritage assets (including World Heritage Sites, Scheduled Monuments, Listed Buildings, Registered Historic Parks and Gardens and Registered Battlefields);
- The Warwickshire Historic Environment Record (HER) and the Staffordshire HER for records on statutory designated sites, and for records of known archaeological or historical interest and archaeological events;
- LPA information on conservation areas and locally listed buildings;
- Primary sources such as maps and documents;
- British Geological Survey data and available geotechnical and topographical survey data; and
- Online sources, such as British History Online and the Archaeological Data Service.

Site Visit

- 14.3.11. The assessment included a site visit carried out on the 21st of October 2020 in order to determine the topography and existing land use, the nature of the existing buildings, identify any visible heritage assets (e.g. structures and earthworks), and assess factors which may have affected the survival or condition of any known or potential assets.
- 14.3.12. The site visit also extended into the outer study area beyond the site for the purposes of scoping designated heritage assets and their indivisibility with the proposed development, as Historic England guidance, and for the settings assessment itself.

ASSESSMENT METHODOLOGY

- 14.3.13. Following the characterisation of the baseline conditions, the methodology used to characterise the likely environmental effects on potential archaeological buried heritage assets and above ground at the site has entailed:
- Evaluating the significance of heritage assets, based on existing designations and professional judgment where such resources have no formal designation, and considering historical, archaeological, architectural / artistic interest as outlined in the NPPF (**Ref. 14.2**) and Historic England's *Conservation Principles* (**Ref. 14.6**);
 - Evaluating the contribution that setting makes to the overall significance of above ground heritage assets selected for assessment (**Ref. 14.7**);
 - Predicting the magnitude of change upon the known or potential heritage significance of assets and the likelihood and resulting significance of environmental effect;
 - Considering the mitigation measures that have been included within the proposed development and any additional mitigation that might be required in order to avoid, reduce or off-set any significant negative effects; and
 - Quantifying any residual effects (those that might remain after mitigation).
- 14.3.14. In terms of the consideration of effects related to changes in setting, the Historic England stepped approach has been followed. This comprises:
- Step 1, identifying the designated assets likely to experience a change with respect to their setting;
 - Step 2, assessing the contribution that setting makes to the significance of the asset;
 - Step 3, assessing the effect of the proposed development on the significance of the asset;

- Step 4, maximising enhancement and minimising harm (mitigation):
- Step 5, (reporting the outcome of the assessment) is presented within this chapter.

Assessing asset (receptor) heritage significance

14.3.15. The NPPF defines significance as 'The value of a heritage asset to this and future generations because of its heritage interest. That interest may be historic, archaeological, architectural or artistic.' The determination of the significance in this assessment is based on statutory designation and/or professional judgement against four values identified in Historic England *Conservation Principles* (Ref. 14.6):

- *Evidential value*: the potential of physical remains to yield evidence about past human activity. This might consider date; rarity; state of preservation; diversity/complexity; contribution to published priorities; supporting documentation; collective value and comparative potential.
- *Historical value*: the ways in which past people, events and aspects of life can be connected through a place and/or heritage asset to the present. This tends to be illustrative or associative.
- *Aesthetic value*: the ways in which people draw sensory and intellectual stimulation from a place and or heritage asset, considering what other people have said or written.
- *Communal value*: the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory.

14.3.16. These values encompass the criteria that Historic England are obliged to consider when statutorily designating heritage assets. Each asset is evaluated against the range of criteria listed above on a case-by-case basis. Unless the nature and exact extent of buried archaeological remains within any given area has been determined through prior investigation, significance is often uncertain.

14.3.17. In relation to designated heritage assets, the assessment considers the contribution which the historic character and setting makes to the overall significance of the asset.

14.3.18. The criteria for establishing the value in relation to the cultural heritage resource has been adapted from the retracted DMRB Volume 11 Environmental Assessment Section 3 Environmental Topics Part 2 HA 208/07 Cultural Heritage (2007) (see **Table 14.2** below).

Table 14.2 - Criteria for Establishing the Value of Heritage Assets

Heritage Asset description	Value (Significance) of heritage resource
Structures inscribed as of universal importance as World Heritage Sites (including nominated sites) Other heritage assets of recognised international importance Undesignated heritage assets of international importance	Very High
Scheduled Monuments Grade I and Grade II* listed buildings Grade I and Grade II* registered parks and gardens Other listed buildings that can be shown to have exceptional qualities in their fabric or historical associations Conservation Areas containing very important buildings	High

Heritage Asset description	Value (Significance) of heritage resource
Undesignated structures of clear national importance Undesignated heritage assets of national importance	
Grade II listed buildings Grade II registered parks and gardens Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical associations Conservation Areas containing buildings that contribute significantly to its historic character Historic Townscape or built-up areas with important historic integrity in their buildings, or built settings (e.g. including street furniture and other structures) Undesignated heritage assets with regional importance	Medium
Locally listed buildings Historic (unlisted) buildings of modest quality in their fabric or historical association Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings (e.g. including street furniture and other structures) Undesignated heritage assets with a local importance	Low
Buildings of no architectural or historical note; buildings of an intrusive character Undesignated heritage assets with no significant value or interest	Negligible
The value of the resource has not been ascertained Buildings with some hidden (i.e. inaccessible potential for historical significance).	Unknown

Magnitude of Change

14.3.19. Determination of magnitude of change upon the significance of known or potential heritage assets is based on the severity of the likely impact (e.g. physical effects on built heritage assets or the permanent presence of new structures etc. that result in changes to the contribution of setting to the heritage significance of a built heritage asset). **Table 14.3** describes the criteria used in this assessment to determine the magnitude of change.

Table 14.3 - Magnitude of Change

Magnitude of Change	Description of Change
High	Complete removal of asset. Change to asset significance resulting in a fundamental change in our ability to understand and appreciate the resource and its historical context, character and setting. The transformation of an asset's setting in a way that fundamentally compromises its ability to

Magnitude of Change	Description of Change
	be understood or appreciated. The scale of change would be such that it could result in a designated asset being undesignated or having its level of designation lowered.
Medium	Change to asset significance resulting in an appreciable change in our ability to understand and appreciate the asset and its historical context, character and setting. Notable alterations to the setting of an asset that affect our appreciation of it and its significance; or the unrecorded loss of archaeological interest.
Low	Change to asset significance resulting in a small change in our ability to understand and appreciate the asset and its historical context, character and setting.
Negligible	Negligible change or no material change to asset significance. No real change in our ability to understand and appreciate the asset and its historical context, character and setting.
Uncertain	Level of survival / condition of resource in specific locations is not known magnitude of change is therefore not known.
No Change	No Change

Significance of Environmental Effect

- 14.3.20. The assessment of likely significant effects has considered the site preparation, demolition and construction and operational Stages. The significance level attributed to each effect has been assessed based on the heritage significance of the affected receptor (heritage asset) and the magnitude of change (impact) to the heritage significance of the receptor due to the proposed development.
- 14.3.21. The environmental effect is outlined in **Table 14.4**. Effects may be either negative (adverse) or positive (beneficial) and are defined initially without mitigation. The table is essentially a guide only, so that the process is transparent and the rationale for the effect scores is provided in the relevant sections. Where the resulting effect comprises two separate levels (i.e. 'moderate or minor' or 'minor or negligible'), professional judgement has been applied to select the most appropriate significance of effect.
- 14.3.22. Where information is insufficient to be able to quantify either the asset significance or magnitude of change with any degree of certainty, the effect is given as 'uncertain'. This might be the case for possible buried heritage assets, the presence, nature, date, extent and significance of which is uncertain due to the absence of any site-based investigation.

Table 14.4 – Significance of Environmental Effect

Magnitude of Change (Impact)	Heritage Asset (Receptor) Heritage Significance			
	Very High	High	Medium	Low
High	Major	Major	Major or Moderate	Moderate or Minor
Medium	Major or Moderate	Major or Moderate	Major or Moderate	Minor

Magnitude of Change (Impact)	Heritage Asset (Receptor) Heritage Significance			
	Very High	High	Medium	Low
Low	Moderate or Minor	Moderate or Minor	Minor	Minor
Negligible	Minor or Negligible	Minor or Negligible	Negligible	Negligible

14.4 MITIGATION MEASURES AND SIGNIFICANCE OF RESIDUAL EFFECTS

APPROACH TO MITIGATION

- 14.4.1. An appropriate mitigation strategy would aim to offset or reduce any negative effect. Measures to mitigate effects would normally consist of design adjustments, to allow significant resources to be protected and retained (preservation *in situ*) or, where this is not feasible, investigation and recording in advance of development (e.g. archaeological standing building recording in advance of demolition) with dissemination at an appropriate level (preservation by record).
- 14.4.2. As heritage assets are an irreplaceable resource it is generally considered as standard practice within the planning system to implement mitigation measures in order to reduce or offset any level of negative effect on a heritage asset where the proposed change would physically alter or remove the asset, including minor negative. This is to ensure that finite and irreplaceable remains are not removed / lost without record. The level of mitigation proposed is, in each case, proportionate to the significance of the asset being affected.
- 14.4.3. The residual effect reflects the success rating for the recommended mitigation strategy.

ENVIRONMENTAL EFFECT SIGNIFICANCE

- 14.4.4. The following terms have been used to define the significance of the effects identified:
- **Major effect:** where the proposed development could be expected to have a considerable effect (either positive or negative) on heritage assets (receptors). For the historic environment, in terms of the NPPF, this equates to substantial harm to, or loss of, significance of an asset of very high, high or medium heritage significance, as a result of changes to its physical form or setting.
 - **Moderate effect:** where the proposed development could be expected to have a noticeable effect (either positive or negative) on heritage assets (receptors). For the historic environment this equates to less than substantial harm to the significance of an asset of very high, high or medium heritage significance, as a result of changes to its physical form or setting.
 - **Minor effect:** where the proposed development could be expected to result in a small, barely noticeable effect (either positive or negative) on heritage assets (receptors). For the historic environment this equates to less than substantial harm to the significance of an asset of very high, high or medium heritage significance, as a result of changes to its physical form or setting, or substantial harm to, or the loss of, significance of an asset of low heritage significance.
 - **Negligible:** where no discernible effect is expected as a result of the proposed development on heritage assets (receptors) (i.e. the effect is insignificant).

- 14.4.5. Residual effects that are classified as **moderate or above** are considered to be ‘**significant**’ in EIA term. Residual effects classified as **minor or below** are considered to be ‘**not significant**’. The language used in the NPPF (i.e. substantial or less than substantial harm) has been correlated with the standard EIA methodology. A major effect equates to 'substantial harm' whilst all the lesser effects are considered 'less than substantial harm'.

14.5 BASELINE CONDITIONS

DESIGNATED HERITAGE ASSETS

- 14.5.1. The site does not contain any nationally designated (protected) heritage assets, such as scheduled monuments, listed buildings, conservation areas, registered battlefields or registered parks and gardens.
- 14.5.2. The closest listed building is the Grade II listed Hall End Hall Farm, constructed in the late 17th-early 18th century, located 750m south east of the site. A group of four Grade II listed buildings is located at Freasley between 830m and 930m south west of the site.
- 14.5.3. There are no scheduled monuments, registered battlefields, registered parks and gardens or conservation areas within the 1km outer study area.

NON-DESIGNATED HERITAGE ASSETS

- 14.5.4. There are a number of known non-designated features of heritage interest within the site, as identified during the course of this study. These comprise two possible prehistoric or Romano-British enclosures recorded during a geophysical survey of the proposed development area in October 2020, as well as evidence for field boundaries, possible plough headlands, the site of a post medieval sheep wash and the site of a small post medieval farmstead known as Leisure Barn.
- 14.5.5. The site has potential to contain possible, previously unrecorded, archaeological remains. The potential for such is presented in **Table 14.5**.

SITE TOPOGRAPHY AND GEOLOGY

- 14.5.6. Topography can provide an indication of suitability for past human settlement, and ground levels can indicate whether the ground has been built up or truncated, which can have implications for archaeological survival. Geology can provide an indication of suitability for early settlement, and potential depth of remains.
- 14.5.7. The site is located on a slight, gradual incline from 92.4m Ordnance Datum (OD) in the south west to 105.1m OD in the north east. The geology comprises of Halesowen Formation bedrock which comprises of mudstone, siltstone and sandstone. It is a sedimentary bedrock formed approximately 308–310 million years ago in the Carboniferous Period and it is thought the local environment was previously dominated by rivers. No superficial geology is recorded in this area.
- 14.5.8. Ground Investigations (GI) were completed across the site for engineering purposes in September 2020 comprising eight boreholes and 31 trial pits (Ground and Project Consultants Ltd, 2021). The GI revealed that within the site boundary the natural subsoil was recorded across the site at depths of between 0.3m below ground level (m bgl) and 0.4m bgl above solid geology of Halesowen Formation. One trial pit investigated the surfaced area at the south eastern corner of the site and recorded made ground comprising gravelly clayey sand, brick fragments, coal fragments and sandstone of up to 1.0m bgl.

PAST ARCHAEOLOGICAL INVESTIGATIONS

- 14.5.9. A geophysical survey was carried out in support of the present planning application in October 2020 across approximately 32 hectares within the proposed development boundary (**Appendix 14.1 of ES Volume 3**). The geophysical survey did not identify any definitive archaeological anomalies, but several linear trends were interpreted as having a possible archaeological origin. These comprised two possible enclosures located at the northern and western edges of the site, which may be suggestive of prehistoric and/or Romano-British activity. Other anomalies recorded include evidence for ridge and furrow cultivation, a possible infilled pond, the site of a small farmstead and associated former field boundaries as well as a sheep wash. Less easily defined anomalies were interpreted as further possible field boundaries or plough headlands and a possible trackway.
- 14.5.10. Four previous investigations have been undertaken within the 500m study area, which help provide an understanding of the archaeology of the general area and potentially of the site itself. A geophysical (gradiometer) survey carried out in 2014 and trial trenching in 2017 across 29ha 50m to the south of the site encountered evidence for a probable mid to late Iron Age farmstead. Field boundaries, mostly undated, were also recorded. A geophysical (gradiometer) survey carried out 300m south west of the site in 2014 identified anomalies interpreted as either possible ditches or geological anomalies. Trial trenching completed in May 2020, 280m west of the site, encountered evidence for post-medieval agricultural activity in the form of two former field boundaries and possible truncated post holes.

CHRONOLOGICAL SUMMARY

- 14.5.11. **Appendix 14.1 of ES Volume 3** provides a detailed chronological background for the site which is summarised here.
- 14.5.12. There is limited information for prehistoric activity within the 500m study area. The only dated evidence for activity comes from 450m south west of the site and comprises a mid-late Iron Age enclosure and associated undated feature probably representing a small enclosed farmstead. Two possible enclosures identified during the October 2020 geophysical survey suggest possible prehistoric or Romano-British activity located on the northern and western edges of the site.
- 14.5.13. The major Roman Road of Watling Street lies immediately to the south of the proposed development. The two possible enclosures identified by the October 2020 geophysical survey may indicate Romano-British activity within the site. Elsewhere within the 500m study area there is limited evidence for further Romano-British activity other than three post holes identified during the construction of the M42 to the west of the proposed development.
- 14.5.14. There is currently no dated evidence for early medieval or later medieval activity located within the Site. The medieval settlement of Polesworth is located 1.5km to the north and it is possible the Site lay within its agricultural hinterland in the earlier half the later medieval period. By the late 15th century it may have formed part of an estate whose seat was located upon the site of Hall End Hall which, until its demolition in the 1960s, stood 470m east of the proposed development. A number of geophysical anomalies recorded in October 2020 may represent evidence for ridge and furrow cultivation possibly originating in this period, although some of these anomalies may alternatively represent more recent ploughing activity.
- 14.5.15. Late 19th century maps depict two trackways on the eastern side of the proposed development one aligned north-south linking the A5 with the settlement of Birchmoor to the north. The second

trackway leaves the first at a 'T' junction and leads south east through the site of Hall End Hall to reach the A5. Two isolated buildings probably depicting an outfarm (field barns/animal sheds) were also depicted towards the centre of the Site and west of the north-south aligned trackway. By 1901 a third larger range was erected at the outfarm and an access track had been constructed to link the complex to the north-south trackway. It is possible that this building was a farmhouse and the complex was then named Leisure Barn. A small sheepwash existed on the western side of the north-south trackway at the south east corner of the proposed development by at least the 1920s and probably earlier.

- 14.5.16. It is possible that between 1955 and 1967 at least part of Leisure Barn had been reconstructed and the sheepwash removed leaving a small pond. The greatest change to the proposed development occurred in the 1980s when the M42 motorway was constructed to the west. This appears to have led to the demolition of Leisure Barn and the removal of all the internal field boundaries leaving one large field and part of a second to the east of the north-south trackway within the site boundary.
- 14.5.17. Within the 500m study area Hall End Hall Farm, originally known as Holt Hall, is a Grade II listed building located 750m south-east of the site, constructed in the late 17th-early 18th century. The original Hall End Hall stood 425m to the east of the site and was built in the late 16th century or earlier; it is likely to have been the focus of an estate mentioned above as being first recorded in the 15th century. By the late 19th century a small landscape park existed to the south between the Hall and the A5. Hall End Hall was demolished in 1969 and its park now forms part of an agricultural field. Two collieries had been established by the end of the 19th century, both called Birch Coppice Colliery. One stood to the south of the A5, where a large spoil heap and Minor's Memorial remain to mark its location, and the other was located to the north of the small settlement of Birchmoor, which probably originated to provide housing for the mine workers.

FACTORS AFFECTING ARCHAEOLOGICAL SURVIVAL

- 14.5.18. Archaeological survival is likely to be high across the majority of the site as it remains largely undeveloped having probably been in agricultural use since at least the medieval period. The land is currently under arable cultivation and subject to modern ploughing. Deep ploughing, where used, may have truncated any archaeological features present since they would lie directly beneath the topsoil. Generally, the upper 0.3–0.4m will have been reworked, but cut features potentially survive.
- 14.5.19. The site of Leisure Barn, towards the centre of the site where the 2020 geophysical survey encountered significant disturbance, is likely to have truncated or removed any earlier archaeological remains which may have been present. Similarly, the area of hard-standing covering 0.5ha at the south eastern corner of the site may have resulted in the truncation or removal of any archaeological remains present although cut features may survive dependent upon the depth of ground levelling which may have occurred to facilitate its construction.

BURIED HERITAGE ASSETS: POTENTIAL AND STATEMENT OF HERITAGE SIGNIFICANCE

- 14.5.20. **Table 14.5** below sets out the heritage significance of buried heritage assets considered in this assessment.

Table 14.5 – Buried Heritage Assets: Potential and Statement of Heritage Significance

Buried Heritage asset	Potential	Heritage significance	Explanation
Prehistoric remains.	Moderate	Medium or High (where geophysical survey features correlate with sustained activity)	There is the potential that the two possible enclosures recorded within the proposed development boundary during the October 2020 geophysical survey may be associated with prehistoric activity. Evidence for Iron Age activity has been recorded to the south-west indicating a degree of activity during this period within the wider landscape. Otherwise there is limited evidence for activity beyond a couple of stray finds within the study area.
Roman remains	Moderate	Medium or High (where geophysical survey features correlate with sustained activity)	The site is located adjacent to the major Roman road, Watling Street now the A5 and during the construction of the M42 the discovery of three post-holes indicated evidence for activity within the landscape around the site. The two enclosures identified during the October 2020 geophysical survey within the site may be associated with activity which extended into or originated in this period.
Early medieval remains	Low	N/A	There are no finds or features from this period recorded within the study area. There is currently no indication that the site was either occupied or formed part of an agricultural hinterland at this date.
Later medieval and post medieval remains.	Moderate/High	Low	Geophysical survey in October 2020 identified anomalies indicating ploughing activity which may have originated in the medieval period. Archaeological remains associated with the demolished Leisure Barn and sheepwash may also survive albeit truncated by subsequent agricultural ploughing.

ABOVE GROUND HERITAGE ASSETS: STATEMENT OF HERITAGE SIGNIFICANCE

Assets Outside the Site

14.5.21. **Table 14.6** below sets out the heritage significance of built heritage assets considered in this assessment. **Appendix 14.1 of ES Volume 3** provides the background and rationale for assigning significance, with a discussion of how setting contributes to that, for designated heritage assets.

Table 14-6 – Above Ground Heritage Assets outside the Site: Statement of Heritage Significance

Heritage asset	Designation	Heritage significance	Description
Hall End Hall Farm	Listed Grade II	Medium	<p>Hall End Hall Farm is a grade II Listed former farmhouse located 750m south east of the site, which faces north onto the A5 Watling Street. At the road edge are trees which partially obscure the view of the building. Adjacent to the building on the west side is an associated agricultural building and to the south is a private garden enclosed by dense vegetation.</p> <p>The building derives evidential value based on the surviving historic material which can be used to study construction techniques of the period and how buildings have been adapted to serve later requirements. The physical fabric also contributes to the aesthetic value of the building, as an example of vernacular architect and use of local materials. The historic value is derived from the former use of the building as a farmhouse within a rural landscape, with the notably associated buildings allowing for an understanding of the historic character of the area. The building does not retain any communal value as it was not designed to serve the community nor does it now.</p> <p>Historically, the farmhouse would have been defined by its physical and visual association with the farm complex and agricultural surroundings. However, the building is no longer in use as a farmhouse and the land enclosing the building to the east, south and west have all been developed as industrial-warehouse buildings and the A5 dual carriageway stands in front of the building within very close proximity (approximately 30m). As such the setting has been significantly altered in a harmful way and the ability to appreciate the former function of the building considerably diminished. Additionally, Watling Street and the buildings to the west of Hall End Hall Farm create a physical division between the building and the surviving fields to the north, including the site to the north-west. As a result, it is harder to associate the surviving agricultural landscape with the building and its historic value as a former farmhouse. Therefore, setting is considered to make a low contribution to the significance of the listed building.</p>

FUTURE BASELINE

14.5.22. For buried heritage assets within the site, the future baseline is expected to be the same as the present. Such remains are a static resource, which have reached equilibrium with their environment and do not change (i.e., decay or grow) unless their environment changes as a result of human or natural intervention. For the above ground heritage assets within the site, there may be some decay over time in the absence of the proposed development.

14.5.23. In terms of the above ground heritage assets within the site, and the setting of selected assets within and beyond the site, this may change due to the presence of future developments, although such proposals (other than those identified within this ES) are not currently known. These could potentially have a detrimental or positive effect on setting and could result in the intervening presence of buildings and / or mature vegetation.

14.6 IDENTIFICATION AND VALUATION OF KEY IMPACTS (CONSTRUCTION AND OPERATIONAL)

OUTLINE OF PROPOSED DEVELOPMENT RELEVANT TO THIS CHAPTER

14.6.1. Archaeological survival is anticipated to be high as the majority of the site has not been previously developed. There is a moderate potential for prehistoric activity and a moderate potential for Romano-British activity, possibly of medium to high heritage significance depending upon the nature, survival and extent of any remains present. There is a high potential for medieval and post-medieval agricultural activity of low significance to be present.

CONSTRUCTION STAGE EFFECTS

Partial or Complete Loss of Buried Heritage Assets in Areas where Ground Disturbance is Proposed

- 14.6.2. It is assumed that topsoil would be removed across the entire site as part of the preliminary site works, with the exception of c.0.5ha of existing hard standing at the south adjacent to the A5 road. The removal of topsoil is a potential impact as (in addition to the loss of any residual evidence it contains) it exposes any archaeological remains that may be present immediately beneath the topsoil. These may then be affected by movement of vehicles and plant involved in construction activities, for example through rutting and compaction. In addition, it is possible that topsoil removal without archaeological supervision may result in overstripping, which would have an impact upon archaeological remains located beneath the topsoil, or understripping, where archaeological features are concealed beneath a thin layer of topsoil but are then exposed and unprotected from subsequent construction activities.
- 14.6.3. Cut and fill groundworks will be required to construct building foundation plateaus and landscaping bunds, the design of which has yet to be finalised. It is assumed for the purpose of this assessment that the maximum depth of the cut would be 5m which would partially or completely remove any remains present. The landscaping bunds will be created to a maximum height of 5m and the redeposition of the soil at these locations would result in any archaeological remains present being buried (and preserved) beneath the redeposited material.
- 14.6.4. The foundation design has yet to be finalised. For the purposes of this assessment the foundations are assumed to comprise strip foundations and/or foundation pads with possible depths of between 0.8mbgl and 2.0m bgl. Outside of any areas which have been subject to the ground levelling works the construction of the foundations could truncate or remove any archaeological remains present within their footprint.
- 14.6.5. The excavation of new service trenches and drains would extend to a depth of 1.0–1.5mbgl as assumed for the purposes of this assessment. This would entirely remove any archaeological remains within the trench footprint.

- 14.6.6. Ground intrusion from the proposed tree planting and subsequent root action is assumed for the purposes of this assessment to reach a depth of c. 1.0–1.5mbgl. This would entirely remove or severely disturb any archaeological remains at the tree location.
- 14.6.7. During construction, anything that would cause ground disturbance, such as preliminary ground works, site strip/topsoil removal, remediation, landscaping, planting, excavation for basements, foundations, services, drainage and lighting, could potentially have an impact on known or possible buried heritage assets. Any impacts would be permanent and irreversible.

Table 14-7 – Construction Stage Effects (prior to mitigation)

Heritage asset (receptor)	Heritage significance	Magnitude of Change	Significance of Environmental Effect (prior to mitigation)
Possible prehistoric remains. (Moderate potential)	Medium or High (where geophysical survey features correlate with sustained activity)	High (Substantial Harm)	Moderate or Major Adverse Permanent, Long Term Effect (Significant)
Possible Roman remains (Moderate potential)	Medium or High (where geophysical survey features correlate with sustained activity)	High (Substantial Harm)	Moderate or Major Adverse Permanent, Long Term Effect (Significant)
Possible later medieval and post-medieval remains. (Moderate to High potential)	Low	High (Substantial Harm)	Minor Adverse Permanent, Long Term Effect (Not Significant)

OPERATIONAL STAGE EFFECTS

Permanent Change to the Setting of Non-Designated above Ground Heritage Assets within the Application Boundary

- 14.6.8. The operational stage effects are entirely confined to setting impacts on designated heritage assets within the study area, which have been scoped into the assessment as outlined in **Table 14.6** and addressed below.
- 14.6.9. The impacts would arise principally from potential change to the setting of built heritage assets associated with the introduction of the proposed new buildings.

Hall End Hall Farm

- 14.6.1. During the operational phase, views of the proposed development would be limited by distance and the presence of existing buildings, although the proposed height of the building(s) indicates that there is a potential for the proposed building to be visible over the intervening buildings. Landscaping bunds, whose design is to be finalised, of anticipated heights of up to 5m are proposed including one along the eastern boundary and south eastern corner of the Site. These bunds may further reduce any visual impact of the proposed development upon this Grade II Listed building. The light from surrounding infrastructure, for example the M42 motorway and A5 trunk road means

that any additional light caused by the proposed scheme is likely to have a minimal effect on the setting of the listed building.

- 14.6.2. The heritage value of the Listed Building is medium, and the magnitude of change is no harm. Therefore, there would be a negligible effect on the asset.

Table 14-8 - Operational Stage Effects (prior to mitigation)

Heritage asset (receptor)	Heritage significance	Magnitude of Change	Significance of Environmental Effect (prior to mitigation)
Hall End Hall Farm, Grade II listed building	Medium	None (No Harm under the terminology of the NPPF)	Negligible (Not Significant)

14.7 MITIGATION MEASURES

CONSTRUCTION STAGE MITIGATION

- 14.7.1. In order to mitigate the potential effects on all buried heritage assets, further investigative works were required in order to clarify the nature, survival, condition and extent of any archaeological assets that may be affected. A programme of archaeological trial trenching to be completed in advance of the determination of the planning application was agreed with NWBC's archaeological advisor.
- 14.7.2. A Written Scheme of Investigation (WSI) for an Archaeological Trial Trench Evaluation (WSP, 2021) was produced and approved by the local authority's archaeological advisor in February 2021 (**Appendix 14.3 of ES Volume 3**). The trial trenching commenced in late September 2021 and was completed in November 2021. At the time of submission, the Archaeological Evaluation Report is still being prepared. The results of the evaluation would inform the mitigation strategy for all archaeological assets that could be affected.
- 14.7.3. For heritage features of high or very high (national) significance; where feasible these could be preserved in situ, i.e. through modifications to the design (e.g. foundations and formation levels or avoidance) or preservation by record (archaeological excavation and recording).
- 14.7.4. For other remains, mitigation could take the form of a targeted excavation (preservation by record) well in advance of the commencement of ground works across all areas where disturbance is proposed. Alternately a programme of 'strip, map and record' could be employed alongside the preliminary construction works (site strip) to ensure all potential archaeological remains were not removed without record. This would need to be programmed with adequate time for the recording of archaeological features.
- 14.7.5. Any archaeological work would need to be undertaken in consultation with the local authority's archaeological advisor and Historic England, in accordance with an approved archaeological Written Scheme of Investigation (WSI).

OPERATIONAL STAGE MITIGATION

- 14.7.6. The adverse effect on the setting of the Grade II listed Hall End Hall Farm is derived from change to how the asset is understood and experienced due to the presence of the proposed development.

No significant adverse effects have been identified pertaining to the Grade II Listed Building and, as a result, no mitigation is proposed.

14.8 RESIDUAL EFFECTS

CONSTRUCTION STAGE RESIDUAL EFFECTS

14.8.1. Following the implementation of an archaeological mitigation strategy the residual effects of the proposed development would be **negligible**.

Table 14-9 - Construction Stage Residual Effects (after mitigation)

Heritage asset (receptor)	Significance of Environmental Effect (prior to mitigation)	Mitigation	Residual Effect (after mitigation)
Possible prehistoric remains. (Moderate potential)	Moderate or Major Adverse Permanent, Long Term Effect (Significant)	Trial trench evaluation to clarify the presence nature, date and significance of any remains, followed where required by an agreed programme of mitigation	Negligible
Possible Roman remains (Moderate potential)	Moderate or Major Adverse Permanent, Long Term Effect (Significant)	Trial trench evaluation to clarify the presence nature, date and significance of any remains, followed where required by an agreed programme of mitigation	Negligible
Possible later medieval and post- medieval remains. (Moderate to High potential)	Minor Adverse Permanent, Long Term Effect (Not Significant)	Trial trench evaluation to clarify the presence nature, date and significance of any remains, followed where required by an agreed programme of mitigation	Negligible

OPERATIONAL STAGE RESIDUAL EFFECTS

14.8.2. The heritage value of the Grade II listed Hall End Hall Farm is medium. The residual effect would be **negligible**.

Table 14-10 - Operational Stage Residual Effects (after mitigation)

Heritage asset (receptor)	Significance of Environmental Effect (prior to mitigation)	Mitigation	Residual Effect (after mitigation)
Hall End Hall Farm, Grade II listed building	Negligible (Not Significant)	None	Negligible (Not Significant)

14.9 REFERENCES

- The Planning (Listed Building and Conservation Areas) Act 1990;

- MHCLG 2021 [Ministry of Housing, Communities and Local Government], July 2021, National Planning Policy Framework;
- MHCLG 2018b [Ministry of Housing, Communities and Local Government], July 2019, Conserving and Enhancing the Historic Environment: Planning Practice Guide;
- North Warwickshire Borough Council Local Plan (2021);
- ClfA [Chartered Institute for Archaeologists] Dec 2014b, Standards and guidance for historic environment desk-based assessment, Reading;
- Historic England, 2008 Conservation principles, policies and guidance, Swindon;
- Historic England, 2016 The setting of heritage assets. Historic Environment Good Practice Advice in Planning Note 3;
- Historic England, 2019 Statements of Heritage Significance: Historic England Advice Note 12.



8 First Street
Manchester
M15 4RP

wsp.com

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