7 Ecology

7.1 Introduction

7.1.1 This Environmental Statement (ES) Chapter presents the baseline ecology and nature conservation aspects of the proposed development site, shown as the red line boundary in Figure 7.1, and hereafter referred to as 'the Site'. This report assesses the likely effects of the proposed development upon ecological receptors; outlines mitigation measures proposed to reduce adverse effects and promote biodiversity gains; and summarises the overall predicted ecological effects of the proposed development.

7.1.2 The Site is located 2 km west of Barnsley town centre, on land between the communities of Gawber, Higham, Pogmoor, Redbrook and Barugh Green, and immediately north-east of Junction 37 of the M1 motorway. The Site comprises of approximately 116 hectares of open fields, which were previously an open-cast mine and later refilled. A plan showing the location of the Site is illustrated in Figure 7.1. The centre of the Site has an approximate Ordnance Survey National Grid Reference of SE 31700 07250.

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

7.1.4 Field surveys encompassed the Site and its environs (as described in Appendix 7.1) to survey for particular ecological receptors (e.g. up to a distance of 500m for potential effects on great crested newts).

7.1.5 A desk study was completed to assess potential effects upon designated sites and protected and notable species within 2 km of the Site. The search was extended up to 15 km to identify European (or Natura 2000) designated sites.

7.1.6 The Chapter considers a mixed-use development of the Site, allowing up to 1,760 homes and up to 43 hectares of employment land (split into Class E/B2/B8 and Class B2/B8. The proposals will also provide:

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

7.1.7 In addition, highway works comprising the construction of two roundabouts and a road link from each into the MU1 Local Plan site allocation (Application No. 2020/0027 & 2020/0028) are also considered within this assessment.

7.1.8 The chapter has been prepared by Tetra Tech Project Ecologist Jonathan Siberry ACIEEM, reviewed by Tetra Tech Principal Ecologist Kirstin Aldous MCIEEM and verified by Tetra Tech Associate Director Marc Jackson CEnv MCIEEM. Please note that WYG rebranded to Tetra Tech in January 2021.

7.2 Assessment Approach

Legislation, Planning Policy and Guidance

National Planning Policy Framework

7.2.1 A revised National Planning Policy Framework (NPPF) was issued on the 19th February 2019 and sets out the Government's planning policies for England and how these are expected to be applied.

7.2.2 Paragraph 170 of the NPPF states that the planning system should contribute and enhance the natural environment by:

- ***protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan)***
- ***recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland***
- ***maintaining the character of the undeveloped coast, while improving public access to it where appropriate***
- ***minimising effects on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures***
- ***preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and***
- ***remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.***

7.2.3 Following the publication of the NPPF in March 2012, Planning Policy Statement 9 (PPS9): Biodiversity and Geological Conservation (2005) was withdrawn. However, *ODPM 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and their impact within the Planning System* (the guidance document that accompanied PPS9) remains valid and provides more detailed guidance (supplementary to the NPPF) for local planning authorities when considering ecological matters in relation to planning decisions.

7.2.4 This guidance notes that local planning authorities need to take account of the conservation of protected species when determining planning applications and highlights that the presence of a protected species is a material consideration when assessing a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. It further notes that priority habitats and species, highlighted as being of nature conservation importance by local biodiversity partnerships, are also capable of being material considerations for planning decisions.

Local Plan Context

7.2.5 The Barnsley Local Plan (Barnsley Metropolitan Borough Council, 2019) was formally adopted on 3rd January 2019 and sets out the key elements of Barnsley's planning framework between up to the year 2033. The policies within the Local Plan that are of most relevance to ecology and nature conservation include:

7.2.6 "Policy BIO1 Biodiversity and Geodiversity

Development will be expected to conserve and enhance the biodiversity and geological features of the borough by:

- ***Protecting and improving habitats, species, sites of ecological value and sites of geological value with particular regard to designated wildlife and geological sites of international, national and local significance, ancient woodland and species and habitats of principal importance identified via Section 41 of the Natural Environment & Rural Communities Act 2006 (for list of the species and habitats of principal importance) and in the Barnsley Biodiversity Action Plan.***
- ***Maximising biodiversity and geodiversity opportunities in and around new developments.***
- ***Conserving and enhancing the form, local character and distinctiveness of the boroughs natural assets such as the river corridors of the Don, the Dearne and Dove as natural floodplains and important strategic wildlife corridors.***
- ***Proposals will be expected to have followed the national mitigation hierarchy (avoid, mitigate, compensate) which is used to evaluate the effects of a development on biodiversity interest.***
- ***Protecting ancient and veteran trees where identified.***
- ***Encouraging provision of biodiversity enhancements.***

Development which may harm a biodiversity or geological feature or habitat, including ancient woodland and aged or veteran trees found outside ancient woodland, will not be permitted unless effective mitigation and/or compensatory measures can be ensured.

Development which adversely effects a European Site will not be permitted unless there is no alternative option and there are imperative reasons of overriding public interest (IROPI)."

7.2.7 In addition to Policy *BIO1 Biodiversity and Geodiversity*, specific policy is provided for the Site under the *'Site MU1 Land south of Barugh Green Road'* policy, as detailed below:

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

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

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

The development will be expected to:

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

<u>International Legislation</u>

7.2.9 This assessment has been considered in the context of the following relevant international biodiversity and conservation legislation.

- The EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC). The main aim of this Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species at a favourable conservation status, including the introduction of protection for those habitats and species of European importance. The Conservation of Habitats

and Species Regulations 2017 (as amended) (the Regulations) represent the UK's implementation of the Directive.

- The Convention on the Conservation of European Wildlife and Natural Habitats 1979 (the Bern Convention) which carries an obligation to protect and conserve over 500 wild plants species and more than 1,000 wild animal species.

- The EC Council Directive on the Conservation of Wild Birds (79/409/EEC) which provides a framework for the conservation and management of, and human interactions with, wild birds in Europe.

- The Convention on Wetlands of International Importance as Waterfowl Habitat 1972 (the Ramsar or Wetlands Convention) which has the status of a legal treaty for the designation and protection of wetland habitats. The Ramsar Convention allows the designation of wetlands of international importance as Ramsar sites, the promotion of the wise-use of all wetlands in the territory of each country, and international cooperation with other countries to further the wise-use of wetlands and their resources.

- The Convention on the Conservation of Migratory Species of Wild Animals 1979 (the Bonn Convention) which provides a global system offering protection for all threatened migratory species and their habitats.

National Legislation

7.2.10 The Wildlife and Countryside Act 1981 (as amended) (the W&CA) is the primary legislation covering endangered or threatened species in England and sets out the framework for the designation of SSSIs.

7.2.11 The Protection of Badgers Act 1992 brings together all the legislation that is specific to badgers, with the exception of their inclusion on Schedule 6 of the W&CA.

7.2.12 The Hedgerows Regulations 1997 aims to protect hedgerows of importance from destruction. The Regulations only apply to hedgerows growing on or adjacent to certain land use categories.

7.2.13 The Countryside and Rights of Way Act 2000 (the CRoW Act) affords a greater level of protection to SSSIs, provides better management arrangements for Areas of Outstanding Natural Beauty (AONB) and strengthens wildlife enforcement legislation. Section 74(2) of the Act requires the Secretary of State to list those habitats and species of principal importance for the conservation of biodiversity, in accordance with the United Nations Convention of Biological Diversity 1992.

7.2.14 The Natural Environment and Rural Communities Act 2006 (the NERC Act) is:

"An Act to make provision about bodies concerned with the natural environment and rural communities; to make provision in connection with wildlife, sites of special scientific interest, National Parks and the Broads; to amend the law relating to rights of way; to make provision as to the Inland Waterways Amenity Advisory Council; to provide for flexible administrative arrangements in connection with functions relating to the environment and rural affairs and certain other functions; and for connected purposes."

7.2.15 Elements of the act most relevant to the proposed scheme include (i) extension of the CRoW Act's biodiversity duty to public bodies and statutory undertakers to

ensure due regard to the conservation of biodiversity; and (ii) modification of the CRoW Act so that species listed under Section 74 of that Act are now listed under Section 41 of the NERC Act.

7.2.16 Section 41 (S41) of the NERC Act requires the Secretary of State to publish a list (in consultation with Natural England) of habitats and species which are of principal importance for the conservation of biodiversity in England (referred to here as Priority Habitats and Priority Species). The S41 list is used to guide decision-makers such as public bodies including local and regional authorities, in implementing their duty under Section 40 of the NERC Act, to have regard to the conservation of biodiversity in England, when carrying out their normal functions (e.g. planning).

7.2.17 Local Biodiversity Action Plans (LBAP) identify habitats and species conservation priorities at a local level, and are usually drawn up by a consortium of local government organisations and conservation charities and are therefore capable of being material considerations for planning decisions, as outlined under *ODPM 06/2005.*

Species-specific Legislation

7.2.18 The following is a summary of legislation of potential relevance to the proposed development:

Great Crested Newts

7.2.19 The great crested newt (GCN) is a European protected species and is protected under the Habitats Regulations and the W&CA, which make it an offence to:

- Intentionally or recklessly kill, injure or take a GCN;
- Possess or control any live or dead specimen or anything derived from a GCN;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a GCN; or
- Intentionally or recklessly disturb a GCN while it is occupying a structure or place which it uses for that purpose.

Reptiles

7.2.20 The adder, grass snake, slow-worm and common lizard receive partial protection under the W&CA which makes it an offence to:

- Intentionally or recklessly kill or injure these animals.

Bats

7.2.21 All UK species of bat are fully protected under Schedule 5 of the W&CA and are European protected species through their inclusion in the Habitat Regulations, which makes it an offence, amongst other things, to:

- Deliberately, recklessly or intentionally kill, injure or take a bat; or,
- Deliberately, intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat, or

deliberately disturb a bat while it is occupying a structure or place which it uses for that purpose.

Birds

7.2.22 Under the W&CA it is an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy the nest (whilst being built or in use) or eggs of a wild bird. In addition, there are 194 species that are subject to special conservation measures concerning their habitat in order to ensure their survival and reproduction. This includes an offence to disturb any birds listed on Schedule 1 of the W&CA whilst nesting, or their dependant young.

Badgers

7.2.23 It is illegal for a person to kill, injure or take a badger under the Badgers Act. It is also an offence to destroy, damage or obstruct an entrance to a badger's sett, or to disturb animals whilst within a sett.

Otter

7.2.24 The otter is a European Protected Species and is also fully protected under Schedule 5 of the W&CA. It is an offence to capture, kill or injure otters, or to damage or destroy a breeding or resting place. It is also an offence to disturb otter or obstruct access to their resting places.

Water Vole

7.2.25 Water voles are listed under Schedule 5 of the W&CA. It is an offence to kill, injure or take a water vole, or to damage or destroy a water vole's place of shelter or protection (i.e. burrow). It is also an offence to disturb a water vole or obstruct access to their place of shelter or protection.

Invertebrates

7.2.26 A number of invertebrate species are protected by European and UK legislation, such as those listed on Schedule 5 of the W&CA and in the Habitat Regulations. As a result, some species are protected from some or all of the following (amongst others): (i) killing, injuring or taking; (ii) possession or control; (iii) damage to, destruction of, or obstruction of access to, any places used for shelter or protection; and (iv) disturbance while using such a structure.

Invasive Species

7.2.27 It is illegal to allow any animal which is not ordinarily resident in, and is not a regular visitor to, Great Britain, or is listed on Schedule 9 of the W&CA, to escape into the wild, or to release it into the wild without a licence. It is also illegal to plant or otherwise cause to grow in the wild any plant listed on Schedule 9 of the Act.

Methodology

7.2.28 The impact assessment for ecology has been carried out with reference to the Chartered Institute of Ecology and Environmental Management's (CIEEM) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (v1.1, 2019), hereafter referred to as 'the CIEEM Guidelines'.

7.2.29 The impact assessment process involves:

- Establishing the baseline;
- Identifying and characterising impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts;
- Assessing the significance of any residual effects after mitigation;
- Identifying appropriate compensation measures to offset significant residual effects; and
- Identifying opportunities for ecological enhancement.

7.2.30 The starting point for any assessment of impacts is to determine which ecological features are important and should be subject to detailed assessment. Ecological features can be important for a variety of reasons; for example, the quality or extent of designated sites or habitats, to habitats/species rarity, to the extent to which they are threatened throughout their range, or to their rate of decline (CIEEM, 2019).

7.2.31 A Zone of Influence (ZoI) of 15 km from the Site has been used to identify internationally designated sites which may be affected by the proposed works.

7.2.32 Other receptors have been subject to assessment based upon an ZoI appropriate to the scale of each individual receptor.

7.2.33 On the basis that part of the Site will be subject to an outline application, it has been deemed appropriate to assess impacts against a site-wide Parameters Plan. This will then allow for further iteration to take place to the scheme, within the remit of the assessed parameters.

Assessment Criteria

Determining Importance

7.2.34 The CIEEM Guidelines recommend that the importance of ecological receptors is considered within a defined geographical context. For the purpose of this assessment the following levels are used:

- **International** - Special Protection Areas (SPA), Special Areas of Conservation (SAC), Ramsar sites, etc.;
- **National** - Sites designated at UK level, e.g. Sites of Special Scientific Interest (SSSI);
- **Regional** - Habitats or populations of species of value at a regional (i.e. Yorkshire and the Humber) level;
- **County** - Designated sites, such as LWS or habitats/species populations of value at a county (i.e. South Yorkshire) level;
- **District** - Habitats or species populations of value at a District (i.e. Barnsley) level;
- **Local** - Habitats or species populations of value in a local (i.e. the parishes of Cawthorne, Silkstone, Stainborough and the western area of Barnsley District parish) context; and,

- **Negligible** - Habitats or species populations which are of limited ecological value, or are of value only within the context of the Site and its immediate surrounds.

Valuing Habitats

7.2.35 With reference to the CIEEM Guidelines, the value of habitats is measured against published selection criteria where available. Habitat types of European (International) conservation importance are listed on Annex I of the Habitats Directive. Habitats that are considered a priority for conservation in England are listed as habitats of principal importance under S41 of the NERC Act. Reference is also made to local Habitat Action Plans (HAPs), as detailed within the LBAP. Habitat valuation takes such matters into consideration alongside wider contextual information such as quantity, quality, connectivity, rarity, etc.

7.2.36 Where important habitat types are affected but they are currently in a degraded or unfavourable condition, their potential value is considered, including the potential to contribute to conservation objectives. In accordance with the guidance, the assessor can assign certain features a greater value if there is a reasonable likelihood that they can be restored to a higher value in the future.

Valuing Species

7.2.37 Species of European (International) conservation importance are listed on Annexes II, IV and V of the Habitats Directive and Annex I of the Birds Directive. Species that are considered to be priorities for conservation in England are listed under S41 of the NERC Act and the LBAP.

7.2.38 With reference to the CIEEM Guidelines, the importance of species populations is measured using existing criteria where available. Contextual information about distribution and abundance is considered, including trends based on historical records.

Predicting and Characterising Ecological Impacts

7.2.39 With reference to the CIEEM Guidelines, when describing impacts, the following characteristics are considered:

- **Positive or negative** – if an impact will improve or reduce the quality of the environment;

- **Extent** – the spatial or geographical area over which the impact/effect may occur; under a suitably representative range of conditions.

- **Magnitude** – refers to size, amount, intensity and volume. It should be quantified, if possible, and expressed in absolute or relative terms.

- **Duration** - the time for which an impact is expected to last;

- **Timing and frequency** – the number of times an activity occurs and whether impacts occur during critical life-stages or seasons; and,

- **Reversibility** – an irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation.

Direct and Indirect Ecological Impacts

7.2.40 Both direct and indirect impacts are considered within this assessment. A direct impact is directly attributable to a defined action such as the physical loss of a habitat or the immediate mortality of an individual of a particular species. Indirect impacts are attributable to an action which affect ecological resources through effects on an intermediary ecosystem, process or receptor. An example of an indirect effect would be the loss of an important prey species for a predator.

Approaches for Determining Significant Effects

7.2.41 With reference to the CIEEM Guidelines, the assessment only needs to describe those characteristics relevant to understanding the ecological effect and determining the significance. A significant effect, in ecological terms, is defined as an effect that either supports or undermines the conservation objectives for 'important ecological features' or for biodiversity in general. Effects can be considered significant at a wide range of scales from international to local.

7.2.42 As noted above, impacts are only assessed in detail for receptors of sufficient ecological value that impacts upon them may be significant. Therefore, for the purposes of this assessment, impacts are assessed in detail only for those receptors that are of **at least local value**, or are subject to some form of **legal protection**.

7.2.43 After assessing the impacts of the proposal (including the in-built mitigation), consideration is given to avoiding and mitigating likely significant ecological impacts. Once measures to avoid and mitigate ecological impacts have been finalised there is an assessment of the residual impacts. Impacts that will result in effects that are 'significant' will be the factors considered against ecological objectives (legislation and policy) in determining the outcome of the application (CIEEM, 2019).

Scoping and Consultation Responses

7.2.44 The methodology detailed above was suggested as an appropriate methodology within the *Environmental Impact Assessment: Scoping Report* (Pegasus Group, 2021). The response from Barnsley Metropolitan Borough Council's Biodiversity Officer (included as part of the EIA Scoping Opinion included in Appendix 2.2) indicated that he was ***"content"*** with this methodology.

Limitations to the Assessment

7.2.45 There are no significant overall limitations that are considered to compromise the validity of this ES Chapter. Details of any qualifications or limitations which are specifically relevant to a particular floral or faunal survey are provided in the relevant technical appendices (7.1 to 7.6).

7.3 Baseline Conditions

7.3.1 The Site has been subject to desk-based and field surveys between November 2013 and May 2020. Factual reports presenting the results of these surveys are provided in the following appendices:

- Appendix 7.1 – Barnsley West: Ecological Appraisal (WYG, 2021);
- Appendix 7.2 – Barnsley West: Factual Great Crested Newt eDNA Survey Report (WYG, 2020a);

- Appendix 7.3 – Barnsley West: Factual Bat Survey Report (WYG, 2020b);
- Appendix 7.4 – Barnsley West: Factual Breeding Bird Survey Report (WYG, 2020c);
- Appendix 7.5 – Barnsley West: Factual Badger and Hedgerow Survey (WYG, 2020d);
- Appendix 7.6 – Barnsley West: Hedgerow Regulations 1997; Survey and Hedgerow Assessment for Archaeology and History (Tetra Tech, 2021)

7.3.2 Their key findings are summarised in this section, in order to inform the Nature Conservation Evaluation for each of the receptors identified. Please refer to the individual technical reports for detailed survey information and findings.

Desktop Study

International / European Designated Sites

7.3.3 8.3.5 There are three Natura 2000 sites within 15 km of the Site. No other International or European sites, including proposed SPAs or possible SACs, are present.

Table 7.1: Natura 2000 Sites within 2 km of Site

Designation	Site Name	Distance and Direction	Summary of Features
SAC	Denby Grange Colliery Ponds	8.2 km north-west	Waterbody created by coal-mining activity, which has consistently yielded high counts of great crested newt in recent years.
SAC	South Pennine Moors	11.5 km south-west	European dry heaths, blanket bogs and old sessile oak woods (with *Ilex* and *Blechnum*) are the primary features of selection. Northern Atlantic wet heaths (with *Erica tetralix*) and transition mires and quaking bogs are also present but not a primary selection criteria.
SPA	Peak District Moors (South Pennine Moors Phase 1)	11.5km south-west	Notable breeding populations (i.e. regularly used by 1% or more of the Great Britain population) of the following Annex 1 species; golden plover, merlin and short-eared owl.

7.3.4 The above designated sites are considered to be of importance at an **international** level.

Other Statutory Sites

7.3.5 There are no statutory designated sites within 2 km of the Site.

Non-statutory Sites

7.3.6 There are three non-statutory designated sites within 2 km of the Site.

Table 7.2: Non-statutory Designated Sites within 2 km of Site

Designation	Site Name	Distance and Direction	Summary of Features
Local Wildlife Site (LWS)	Redbrook Pastures	Borders the Site to the east	This LWS comprises hedgerows, areas of scrub and two fields, both dominated by a neutral sward; although, the southernmost field contains elements of acidic grassland. Bluebell and wood millet, both South Yorkshire indicators of ancient woodland, are present.
LWS	Hugset Wood	500m west	This site comprises predominantly coniferous plantation with distinct areas of broadleaved semi-natural woodland. Replanted ancient woodland and ancient and semi-natural woodlands form the main classifications of the site. Corsican pine dominates the plantation areas, while sycamore dominates the majority of the broadleaved areas.
LWS	Barnsley Canal at Wilthorpe	1.85km north-east	This LWS comprises a stretch of the disused Barnsley Canal and adjacent farmland. The River Dearne is to the north of the LWS and a railway line is situated just south. An old section of the river forms part of the northern LWS boundary.

7.3.7 The above non-designated sites are considered to be of importance at a **district** level.

Protected / Notable Species Records

7.3.8 Barnsley Biological Record Centre (BBRC), South Yorkshire Bat Group (SYBG) and South Yorkshire Badger Group (SYBgG) returned a range of protected / notable species records within a 2 km radius of the Site, details of which are provided in Appendix 7.1.

7.3.9 A search of MAGIC (DEFRA's interactive, web-based database) was also made to identify records of granted European Protected Species Mitigation Licences (EPSML) within 2 km of the Site.

7.3.10 MAGIC, along with freely available online aerial imagery, was also used to identify waterbodies within 500 m of the Site (in relation to the potential presence of GCN).

7.3.11 A summary of the results of the desk-based study are provided within the individual species sections below.

Field Surveys

7.3.12 For any reference to Target Notes (TN), please refer to Appendix 7.1 for further details and see Figures 7.2a and 7.2b.

Habitats

7.3.13 An Ecological Appraisal (with reference to the *Guidelines for Preliminary Ecological Appraisal;* CIEEM, 2017), including an extended Phase 1 habitat survey (with reference to *Handbook for Phase 1 Habitat Survey*; JNCC, 2010), was completed by WYG in June 2020. This survey acted to update a previous Preliminary Ecological Appraisal of the Site, undertaken by AECOM in 2017 (see Appendix 7.1 for a summary of historic Preliminary Ecological Appraisal survey results.)

7.3.14 The habitats recorded are described below and presented in Figures 7.2a and 7.2b.

7.3.15 In summary, the following Phase 1 habitat types were recorded on or directly adjacent to the Site:

- Broad-leaved Semi-natural Woodland
- Dense Scrub
- Scattered Scrub
- Broad-leaved Scattered Trees
- Hedgerows
- Semi-improved Neutral Grassland
- Improved Grassland
- Marshy Grassland
- Amenity Grassland
- Tall Ruderal
- Standing Water
- Running Water
- Dry Ditch
- Arable
- Bare Ground
- Hardstanding[1]
- Buildings
- Fences
- Wall

Broad-leaved Semi-natural Woodland

7.3.16 The woodland area located in the east of the Site, south of Hermit Lane (TN1) was dominated by pedunculate oak, with frequent sycamore and occasional ash.

7.3.17 Two further areas of woodland were located north of Hermit Lane; one in the centre of the Site (TN2); the second running north-east, from the Site`s centre, towards Redbrook Farm (TN3). The smaller area of woodland at was dominated by alder, with frequent pedunculate oak. The remaining woodland area, running north-east towards Redbrook Farm, covered a larger area and was dominated by pedunculate

[1] Though not listed as a Phase 1 habitat type (JNCC, 2010), 'hardstanding' has been included, as a separate category to the 'bare ground' habitat type, to distinguish between man-made and more naturally occurring bare areas (e.g. bare earth).

oak, with a number of frequent occurring species such as silver birch, ash and alder.

7.3.18 In total there is a total of 1.47 hectares of woodland on the Site. Whilst this is relatively small within the Site context, 'Lowland Mixed Deciduous Woodland' is afforded a HAP under the LBAP.

7.3.19 Woodland present on Site was considered to be of **Local** importance.

Dense Scrub

7.3.20 Within the grassland near Redbrook farm, an area of dense bramble was identified. In addition, small areas of dense scrub were present along the fence between the semi-improved neutral grassland and arable habitat, located in the east of the Site to the north of Hermit Lane (TN3). Hawthorn, rose sp. and bramble were present.

7.3.21 In the south-east of the Site, two areas of dense scrub were present in the tall ruderal dominated field. The larger of the two areas (TN5) was dominated by mature hawthorn, with semi-mature ash and elder. The smaller area (TN6) was dominated by gorse, with abundant elder.

7.3.22 Dense scrub on Site was considered to be of **Negligible** importance.

Scattered Scrub

7.3.23 Scattered scrub was associated with a number of field boundaries on Site and was typically either bramble or hawthorn dominated.

7.3.24 Scattered scrub on Site was considered to be of **Negligible** importance.

Broad-leaved Scattered Trees

7.3.25 Scattered trees were present along the section of Hermit Lane from Hermit House Farm, to the eastern-most Site boundary. Species typically comprised pedunculate oak and ash. To the north of these trees, an isolated, mature pedunculate oak was located in the centre of an improved grassland field.

7.3.26 South of Hermit Lane, to the east of the Site, further scattered trees were noted. Four pedunculate oaks were present within an improved grassland field. South of these trees, within an adjacent field, scattered trees including ash and silver birch were noted on the banks of a small stream. Three mature beech were recorded in the east of the Site, adjacent to Farm House Lane, and two mature ash trees were noted in the south and south-west of the Site (TN12 & TN13).

7.3.27 Scattered trees on Site were considered to be of **Local** importance.

Hedgerows

7.3.28 In addition to the Ecological Appraisal (Appendix 7.1), this section should also be read with reference to the Hedgerow Survey reports (Appendix 7.5; Appendix 7.6).

7.3.29 Approximately 40 hedgerows were identified on Site (see Figure 7.3 for hedgerow locations), nine of which (H3, H4a, H9, H13, H15a, H17a, H17b, H28, H35) were species-rich. The majority of the remaining, species poor, hedgerows were intact, with approximately one-third being defunct, though some had been made stock proof through installation of fencing. Ground flora associated with the hedgerows

was not considered to be notable and typically comprised species associated with the adjacent habitat type (typically improved grassland / arable fields).

7.3.30 Detailed hedgerow surveys were undertaken in 2020/21 to identify any 'Important' hedgerows, with reference to the Hedgerow Regulations 1997. Eight hedgerows (H13, H17, H17a, H17b, H2, H22a, H23 and H28) were considered to be 'Important' under the 'Wildlife and Landscape' criteria (see Appendix 7.5).

7.3.31 Seventeen hedgerows (H2a, H4, H4a, H9, H15, H15a, H17a, H17b, H21, H22, H22a, H23, H26, H28, H33, H34 and H35) were considered 'Important', under the archaeology and history assessment criteria (see Appendix 7.6).

7.3.32 'Hedgerows' are afforded a HAP under the LBAP and whilst the majority are species poor and/or defunct, considered collectively this habitat resource was considered to be of **Local** importance.

Semi-improved Neutral Grassland

7.3.33 Semi-improved neutral grassland was isolated to an area between the centre and east of the Site, north of Hermit Lane (TN14). This grassland has historically been assessed as unimproved neutral grassland (in 2013); however, was assessed as semi-improved neutral grassland in 2017 (see Appendix 7.1 for further details).

7.3.34 Though more species-rich than improved grasslands on Site, the semi-improved neutral grassland was not considered to have a notable plant assemblage for this grassland type. As such, this habitat was considered to be of **Negligible** importance.

Improved Grassland

7.3.35 Two improved grassland fields in the north of the Site were grazed by horses and / or cattle (TN15 & TN16). Improved grassland to the south of Hermit Lane were grazed by horses, ponies and sheep (TN17 – TN31). A further three improved grassland fields were present in the north of the Site, subject to more mixed usage, including haylage (TN32). All were typically dominated by perennial rye-grass, with abundant annual meadow-grass and a low diversity of herbs, indicative of improved grassland habitats. The abundance and diversity of vascular species was notably lower than the semi-improved grassland discussed above.

7.3.36 Improved grassland on Site was considered to be of **Negligible** importance.

Marshy Grassland

7.3.37 A small area of marshy grassland was present in the south of the Site, fenced off from an improved grassland field (TN33). The area was dominated by soft rush, with frequent bulrush.

7.3.38 Marshy grassland on Site was considered to be of **Negligible** importance.

Amenity Grassland

7.3.39 Two residential gardens were present at Hermit House Farm and were indicative of amenity grass areas (TN34). They appeared to be subject to regular mowing and were dominated by perennial rye-grass, with abundant annual meadow-grass.

7.3.40 Amenity grassland on Site was considered to be of **Negligible** importance.

Tall Ruderal

7.3.41 A grazed field in the south-east of the Site, located adjacent to Farm House Lane, was dominated by tall ruderal species, such as broadleaved dock and common nettle, with areas of bare ground also present (TN35). Smaller areas of tall ruderal were also present, located within the grassland near Redbrook Farm, adjacent to an arable field to the north of Hermit Lane and within an improved grassland in the east of the Site; dominated by spear thistle and broad-leaved dock.

7.3.42 Tall ruderal on Site was considered to be of **Negligible** importance.

Standing Water

7.3.43 A single area of standing water was present on Site; Pond 1, located within the woodland north of Hermit Lane. This standing water comprised a pooled area of water, located along the stream which also runs through this woodland. A man-made dam created the pooling effect. 'Ponds' are afforded a HAP under the LBAP; However, at the time of the survey, the water was very shallow and turbid, with large areas of the pond noted to be heavily silted. Great willowherb was dominant, while bulrush was also abundant.

7.3.44 Standing water on Site was considered to be of **Negligible** importance.

Running Water

7.3.1 Two streams were recorded on Site; one located north of Hermit Lane (TN37) and another located to the south of Hermit Lane (TN38). The streams run west-east and south-north, respectively, before eventually merging into a single watercourse at a confluence found outside of the development boundary. The streams both had a slow-moderate flow and lacked any significant aquatic vegetation. Brook 1 incorporates a pond along its course which is largely exposed to direct sunlight; otherwise, the banks of both streams were mostly flanked by deciduous trees. The canopy cover resulted in near-permanent shading of the banks, restricting ground flora assemblage to shade tolerant species such as ivy, wild garlic, bluebells and scattered understory shrubs.

7.3.2 Whilst some areas are in fairly good condition; stepping, trampling and erosion is evident at several locations, causing notable habitat degradation due to regular livestock intrusion and human pressures. The stream is culverted onsite and offsite, to the north, reducing wider landscape connectivity with open, running water. However, 'Running water' is afforded a HAP under the LBAP and these features support riparian habitat.

7.3.3 Running water on Site on Site was considered to be of **Local** importance.

Dry Ditch

7.3.4 A number of dry ditches were identified on Site and were typically bare of vegetation. Although dry during the survey visit (i.e. during the summer), some of these ditches have been observed to support water in previous months / years from surface water runoff.

7.3.5 Dry ditches on Site were considered to be of **Negligible** importance.

Arable

7.3.6 Three forms of arable farmland were present on Site. Firstly, a large arable field in the north-west of the Site contained a crop of wheat (TN40). Field margins of up to 1 m were present around the field and comprised a mixture of grasses and herbs, commonly found with improved grasslands.

7.3.7 Four arable fields did not appear to be seeded / contain any crops during the survey. The first, a large arable field split into two by a dry ditch and hedgerow, was present in the east of the Site, adjacent to Farm House Lane (TN41). The remaining three uncropped fields were present in the south of the Site, adjacent to the M1 motorway embankment (TN42).

7.3.8 The remaining arable fields (TN43 - TN46) were in use as hay meadows for the purpose of creating hay / silage bales. Field margins in these fields were narrow (approx. 20-40 cm) and typically comprised similar grass species as the hay meadows.

7.3.9 'Arable Field Margins' are afforded a HAP under the LBAP; however, the field margins on site were generally narrow and of limited floristic value/diversity.

7.3.10 Arable land on Site was considered to be of **Negligible** importance.

Bare Ground

7.3.11 In the west of the Site, poached ground from regular horse trampling and a large manure pile were noted. In the centre of the southern half of the Site, poached ground caused by regular horse trampling was also noted.

7.3.12 Bare ground on Site was considered to be of **Negligible** importance.

Hardstanding

7.3.13 Hardstanding associated with Hermit Lane and Hermit House Farm comprised concrete / asphalt areas.

7.3.14 Hardstanding on Site was considered to be of **Negligible** importance.

Buildings

7.3.15 See Figure 7.4 for the location of buildings present on Site.

7.3.16 Eight buildings were present on Site, all located at Hermit House Farm. These buildings comprised six outbuildings / barns (B1 – B6), constructed from brick / breeze block / meta and two stone built residential buildings (B7 & B8). Wooden cladding was present on some of the outbuildings / barns.

7.3.17 A further ten buildings were noted directly adjacent to the Site or within areas which are now off Site but have been previously surveyed due to their location within / proximity to the previous site boundary (as per WYG surveys in 2018 and 2019 – Appendix 7.3).

7.3.18 Buildings on Site were considered to be of **Negligible** importance.

Fences

7.3.19 A number of fences were present on Site and comprised a mixture of electric, post and wire and timber post and rail fences.

7.3.20 Fences on Site were considered to be of **Negligible** importance.

Wall

7.3.21 A single dry-stone wall was present in the south-west of the Site, adjacent to Higham Common Road. In addition, the neighbouring residential gardens included walls or a 'wall/fence mix' as boundary features.

7.3.22 Walls on Site were considered to be of **Negligible** importance.

Protected / Notable Species

Amphibians (including GCN)

7.3.23 BBRC returned 19 records of GCN with 2 km of the Site, from the last 10 years. A search of MAGIC identified two granted EPSMLs for GCN at a single site located 775 m north of the Site. The Site is not connected to habitats associated with these GCN records or EPSML's but rather is separated from these habitats by residential and industrial areas and associated roads/infrastructure which would form notable barriers to the movement of GCN.

7.3.24 A search of MAGIC identified one waterbody on Site (Pond 1) and one waterbody within 500 m of the Site (Pond 2). A review of residential gardens located directly adjacent to the Site, using online aerial imagery, indicated the presence of three garden ponds and one potential garden pond within 500 m of the Site (Ponds 3 – 6). See Figure 7.5 for locations of these ponds.

7.3.25 Of those ponds identified on or within 500 m of the Site, only two (Pond 1 and Pond 4) were accessible for surveys.

7.3.26 Pond 1 and Pond 4 have been subject to Habitat Suitability Index (HSI) assessments and eDNA surveys. The ponds were considered to offer 'Below Average' and 'Poor' suitability for GCN, respectively. eDNA analysis of water samples from both ponds returned a negative result for GCN DNA.

7.3.27 Ponds 2, 3, 5 and 6 were not accessible for surveys, as detailed within the eDNA survey report (Appendix 7.2)

7.3.28 Pond 2 and Pond 3 appear to be pooling features, associated with the confluence of Redbrook (similar to Pond 1) may support fish, and in view of the negative eDNA test for Pond 1, are considered unlikely to support GCN.

7.3.29 Pond 5 and Pond 6 are located in residential gardens approx. 250 m south-west of Pond 4 and appear to be ornamental in nature, with hardstanding, ornamental shrub planting and amenity style grass surrounding the ponds (based on review of aerial imagery). Approx. 300 m of hedgerow connects Pond 4 to Ponds 5 and 6 but other surrounding terrestrial habitats (including other areas of Site) were considered to be sub-optimal. In view of the form and context of Ponds 5 and 6, and the negative eDNA result from Pond 4, GCN are considered unlikely to be present in Ponds 5 and 6.

7.3.30 Surveys indicate the absence of GCN from the only onsite waterbody; their presence within surrounding garden ponds was considered unlikely, and the vast majority of the site comprises sub-optimal habitat for this species. GCN are therefore considered likely absent from the Site. However, as a precautionary measure GCN *are* considered further in this assessment for the purpose of **Legal Protections**.

Reptiles

7.3.31 BBRC returned two reptile records from within 2 km of the Site. Both were historic adder records (dated 1989 and 2009) from Silkstone Wood LWS, located 1.59 km south-west of Site. The M1 motorway acts as a barrier to dispersal between these records and the Site.

7.3.32 The majority of the Site comprised large arable and pastoral fields, which offer limited structural variability and were considered sub-optimal for reptiles.

7.3.33 Hibernacula opportunities and habitats such as semi-improved grassland, scrub, tall ruderal, marshy grassland and woodland edges (primarily located between the centre and east of the Site) provide some increased structural variety of greater suitability for reptiles. Hedgerows could also provide commuting routes across the Site.

7.3.34 However, connectivity to suitable reptile habitat located off Site was limited, with the M1 motorway acting as a barrier to dispersal to the south and west of the Site (the direction of the only known reptile records within 2 km of the Site), whilst residential / commercial areas to the north, east and west act as further barrier.

7.3.35 Redbrook Pastures LWS, located directly adjacent to the east of the Site, could support reptiles but no known records were returned from this location and connectivity of the LWS to other suitable habitats was also lacking.

7.3.36 No sightings of reptiles were made on Site or during any of the previous Site surveys.

7.3.37 Reptiles were considered likely absent from the Site; however, as a precautionary measure, reptiles *are* considered further in this assessment for the purpose of **Legal Protections**.

Bats

7.3.38 BBRC returned 182 records of bats species within 2 km of the Site; 61 of which were dated within the last 10 years. The majority of records comprised field records of pipistrelle species. SYBG returned 266 records of bat species within 2 km of Site; 93 of which were dated within the last 10 years. The majority of records were field records, though 66 records were returned for roosting bats (three recent roost records for either common pipistrelle or brown long-eared bat). Other species listed within the records included Daubenton's bat, whiskered bat*,* unknown Myotis species, unknown Nyctalus species, Leisler's bat, noctule, and brown long-eared bat. A search of MAGIC identified one granted EPSML for bats 1.8 km of the Site from 2013/14.

7.3.39 The Site offers opportunities for roosting bats within trees and buildings. Dusk emergence / dawn re-entry surveys undertaken in 2018 (25 trees and seven buildings) and 2020 (44 trees and seven buildings) identified no bat roosts on Site.

7.3.40 The Site was considered to offer 'Moderate' suitability to support foraging / commuting bats, due to the presence of continuous / linear habitats (e.g. hedgerows, running water, woodland and improved grassland) which were connected to the wider landscape (e.g. connected to off Site woodland, running water and residential gardens).

7.3.41 Site-wide activity surveys in 2018 and 2020 generally found that common pipistrelle was the most frequently recorded species, with low numbers of *Myotis sp*., occasional soprano pipistrelles and very rarely, noctules, Leisler's bats and brown long-eared bats. In 2018, a single serotine was recorded. In 2020, a single Nathusius' pipistrelle was also recorded.

7.3.42 Bats on Site were considered to be of **Local** importance.

Birds

7.3.43 BBRC returned 4234 records of bird species within 2 km of the Site, of which 1816 were recent (within the last 10 years) and comprised records of 71 species. See Appendix 7.4 for further details.

7.3.44 Breeding bird surveys were undertaken across the Site in 2018 and 2020.

7.3.45 Surveys in 2018 identified 44 bird species on Site, comprising 11 Birds of Conservation Concern (BoCC) Red listed species and seven BoCC Amber listed species. Eight Species of Principal Importance (SPI) were also identified. Eleven notable birds (i.e. W&CA Schedule 1 / SPI / BoCC Red or Amber) and 22 BoCC Green listed bird were considered to be confirmed or possible breeders.

7.3.46 In comparison, in 2020 (Appendix 7.4) 43 bird species were identified on Site, comprising eight BoCC Red listed species and seven BoCC Amber listed species. Eleven SPI were also identified. Twelve notable birds and 21 BoCC Green listed bird were considered to be confirmed or possible breeders.

7.3.47 In both 2018 and 2020, the Site was considered to support a bird assemblage largely associated with farmland habitats, though also noting a number of garden bird species which was likely influenced by the residential areas located adjacent to the Site.

7.3.48 An incidental record of a single barn owl (foraging between the woodland and arable field, located north of Hermit Lane) was made during the October 2020 bat activity survey; however, no other observations of barn owls were made during any other surveys on Site and no evidence of barn owl was noted within any of the farm buildings at Hermit House Farm or Redbrook Farm.

7.3.49 The bird assemblage on Site was considered to be of **Local** importance.

Otter and Water Vole

7.3.50 BBRC returned no recent records of otter or water vole occurring within the last 10 years within 2 km of the Site.

7.3.51 Two streams with running water were identified; one located north of Hermit Lane (TN37) and another located to the south of Hermit Lane (TN38). Both streams lacked any significant aquatic vegetation and bankside vegetation was also limited, largely as a result of significant shading. The streams were relatively shallow (up to approx. 20 cm deep in the deepest areas, though often approx. 10 cm deep or less). No fish were observed within the streams and no evidence of any burrows or

potential otter holts / resting features or spraints were observed during the Phase 1 habitat survey. The dry ditches onsite were considered highly unlikely to support water voles due to lack of water/vegetation.

7.3.52 A review of online imagery suggested no clear connectivity between any running water or ditches on Site with any watercourses located beyond the M1 motorway or the built-up residential / commercial areas. Any connections (if any) would require a significant length of sub-surface watercourses / drainage infrastructure.

7.3.53 Given the above, otter and water vole were considered likely absent from the Site and as such, of **Negligible** importance.

Invertebrates

7.3.54 BBRC returned 168 records of invertebrates within 2 km of the Site, of which 122 were recent. These 122 records comprised records of only five species; small heath, dingy skipper, wall butterfly, white-letter hairstreak and cinnabar moth.

7.3.55 Invertebrates recorded on Site during the extended Phase 1 habitat survey included a white butterfly Pieris spp., small heath, meadow brown, small tortoiseshell and peacock butterfly caterpillars.

7.3.56 Much of the Site comprised heavily grazed improved grassland or arable areas, both of which were considered to provide limited opportunities for invertebrates; however, fields in use as hay meadows (TN43 – TN46) would offer greater value. Woodland, semi-improved grassland, hedgerows, tall ruderal areas, field margins. were considered likely to provide potential habitat opportunities for common and widespread invertebrate species.

7.3.57 The Site was considered unlikely to support any notable species or populations and as such, considered to be of **Negligible** importance.

Badger

7.3.58 Good practice dictates that information pertaining to the whereabouts of badger records, should not be published due to the risk of persecution. Data search records for badger have therefore not been detailed within the main body text of this assessment. For data search information relating to badger, please see Appendix 7.5.

7.3.59 The majority of the site comprised large open areas of farmland, with large areas of woodland also present. These habitats were considered to provide suitable habitat for badgers to forage and create setts. However, barriers to badger movement and dispersal were present around much of the site, including the M1 motorway to the south and west of the site and residential / commercial areas to the north, east and west.

7.3.60 Surveys undertaken in 2018, 2019 and 2020 identified no evidence of badger and / or setts, (see Appendix 7.5). In addition, no sightings of badger were made during any other survey visits to the site.

7.3.61 Badger were considered likely absent from the Site; they are considered further in this assessment due to the highly mobile nature of this species, as a precautionary measure, for the purpose of compliance with **Legal protections**.

Hedgehog

7.3.62 BBRC returned 15 recent records of West European hedgehog within 2 km of the Site. The most recent record (dated 2019) was located 1.5 km south-west of the Site. The nearest record to Site was of a road casualty on Wilthorpe Road in 2017, located 200 m north-east of the Site.

7.3.63 Foraging opportunities for hedgehog existed on Site in the form of improved and semi-improved grassland, as well as the limited areas of amenity grassland. Hedgehog could seek refuge and / or hibernate within the woodland areas, dense scrub or hedgerows and could also use hedgerows and woodland areas as commuting corridors. The presence of numerous residential gardens adjacent to the Site is also likely to benefit hedgehogs, by providing additional suitable habitat and potential connectivity to off Site areas.

7.3.64 Surveyors recorded any observations of hedgehog throughout 2018 and 2020, during the site-wide walked-transect bats surveys, dusk/dawn bat surveys and dawn breeding bird surveys. A single hedgehog was observed on Site during one July 2020 bat activity survey, located along a field boundary of the arable field in the east of the Site (TN41).

7.3.65 Hedgehogs are listed as a priority species for biodiversity conservation under the NERC Act and they are protected from intentional acts of cruelty under the Wild Mammals (protection of) Act, 1996.

7.3.66 Hedgehog populations on the Site are therefore considered to be of **Negligible** importance. Proposing precautionary measures for wider species, such as badger, was considered reasonable avoidance measures for this species.

Invasive Plant Species

7.3.67 BBRC did not return any records of non-native invasive plant species within 2 km of the Site.

7.3.68 Japanese knotweed was recorded in the west of the Site, though it appeared to have been subject to treatment works (TN51).

7.3.69 No other records of non-native invasive species were recorded on Site.

7.3.70 An importance level is not afforded to non-native invasive species; however, they are included further within this assessment for the purpose of compliance with **Legal protections**.

7.4 Assessment of Likely Significant Effects

7.4.1 As stated in Section 7.2.42, impacts are only assessed in detail for features potentially vulnerable to significant impacts arising from the development that would be significant in EIA terms. Consequently, impacts have only been assessed in detail for those receptors that are of at least Local Importance or are subject to legal protection - this therefore includes the following:

- Statutory Designated Sites – SACs and SPA - **International** Importance;
- Non-statutory Designated Site – LWS – **District** Importance;

- Broad-leaved Semi-natural Woodland – **Local** Importance;
- Broad-leaved Scattered Trees – **Local** Importance
- Hedgerows – **Local** Importance;
- Running Water – **Local** Importance;
- Bats – **Local** Importance;
- Birds – **Local** Importance; and,
- Amphibians (including GCN); Reptiles; Badger; and, Invasive Species – considered for the purpose of **Legal** protections.

Mitigation Inherent with the Submitted Design

7.4.2 As detailed within the Parameter Plan for the entirety of the site (Figure 3.1), strategic green space and drainage infrastructure will be created across the Site.

7.4.3 The illustrative landscaping plan for these strategic green space and drainage infrastructure areas (illustrated on the Landscape Masterplan included at Figure 6.8 of the Landscape and Visual Chapter 6) show the potential habitats which could be created within these areas. These have been considered as part of the submitted design. A variety of habitats are proposed within the strategic green space, such as native shrub planting, woodland planting, mixed native hedgerows and wildflower meadows, to increase biodiversity within these areas. Drainage infrastructure areas also have potential to support a variety of habitats (e.g. wet meadow, wet scrub planting and scattered trees) and can feasibly support both permanently and seasonal wet areas. Whilst providing a function to facilitate recreation and drainage, these areas will also be created and managed to benefit wildlife and biodiversity, both on Site and within the immediate surrounding areas.

7.4.4 The detailed landscaping design provided for the Phase 1 residential area (included as part of the wider planning application submission) shows the creation of 'traditional' wildflower meadow, scattered trees, swales, amenity grassland, native shrub planting, mixed native hedgerow, and ornamental planting. It is also proposed to enhance retained semi-improved grassland on Site to create a traditional wildflower meadow. These habitats will benefit a range of species, including birds, bats, invertebrates and hedgehog, by providing suitable habitat for breeding, seeking refuge, foraging and commuting.

7.4.5 In addition to the habitats detailed above, it is also proposed to translocate approx. 1 km of existing Site hedgerows to the north-western Site boundary. This will allow for translocation of all species-rich hedgerows which would otherwise be lost to the proposed works.

Construction Phase Effects

7.4.6 This section predicts and characterises the likely construction phase impacts on the sensitive ecological features identified above, in light of the embedded mitigation above, but in the absence of any additional mitigation measures.

Statutory Designated Sites - SACs and SPA

7.4.7 Denby Grange Colliery Ponds SAC supports notable populations of GCN and is located at least 8.2 km from the Site. Given this separation distance and the lack

of hydrological links between the SAC and the Site, there will be **no significant effects** upon the SAC and the confidence is **certain / near certain**.

7.4.8 The Site does not support any of the habitat types associated with the South Pennine Moors SAC (largely heathland, bogs and sessile oak woodland). In addition, the distance between the Site and the SAC is 11.5 km and there are no hydrological links between the two (see Flood Risk and Drainage Chapter 10) and no predicted significant air quality effects (see Chapter 12 Air Quality). As such, the potential for any pollution of the SAC, as a result of the proposed development, is considered unlikely.

7.4.9 Although the Site could support golden plover and short-eared owl, the Site is not considered likely to support individuals associated with the Peak District Moors / South Pennine Moors Phase 1 SPA, given the separation distance of at least 11.5 km between the Site and the SPA.

7.4.10 As such, it is considered **certain/near certain** that there will be **no significant effects** upon these statutory designated sites.

Non-statutory Designated Site – LWS

7.4.11 Redbrook Pastures LWS is located directly adjacent to the east of the Site. Although the proposed works will not result in the loss of any habitats within the LWS boundary, construction works have the potential to negatively affect these habitats (e.g. pollution from fuel spills, encroachment of works into root protection zones and artificial light spill). The air quality assessment (Chapter 12) found dust and emissions effects to be negligible (though 'slight' at one, northern boundary receptor point pre mitigation), the potential for earthworks to cause high dust levels, without mitigation was noted. As such, in the absence of any mitigation, as a precautionary approach it is considered **probable** that there would be a **significant negative effect** upon this LWS.

7.4.12 For the remaining five LWS, there are no hydrological links to the Site and any potential terrestrial links are limited due to the built areas surrounding the Site (i.e. residential areas and roads, including the M1 motorway).

7.4.13 Hugset Wood LWS is located 0.55 km to the west of the Site, with the M1 motorway inbetween. It could be susceptible to some minor direct effects (e.g. dust pollution), in the absence of mitigation; however, with reference to the air quality impact assessment it is **probable** there would be **no significant effect** upon this LWS.

7.4.14 The remaining four LWS ('Daking Brook', 'Barnsley Canal at Wilthorpe', 'Silkstone Fall Wood' and 'Falthwaite and Lowe Wood') are each located approx. 1 km or greater from the Site boundary. It is considered unlikely that there will be any direct or indirect effects upon to these four LWS, as a result of the proposed works. As such, it is considered **near certain** that there will be **no significant effect** upon these four LWS.

Broad-leaved semi-natural woodland

7.4.15 As a result of the construction works on Site, some broad-leaved semi-natural woodland will be lost – an area of approximately 0.25 ha. All other areas of woodland will be retained. The loss of this small area of woodland would be **permanent**, but it would have **no significant effect** on the overall woodland integrity.

7.4.16 In the absence of mitigation there is the potential that retained woodland could be negatively impacted by construction works. This could be from encroachment of machinery, compaction of soil or damage to roots. If this were to occur, it would be **probable** to result in a **significant adverse effect** at a **local** level.

Broad-leaved Scattered Trees

7.4.17 Scattered trees would be lost to the proposed cut and fill exercise on the Site; however, where it is possible to retain these, it is also possible that they could be subject to impacts during construction works (e.g. accidental damage by machinery, damaged to roots, etc).

7.4.18 In the absence of mitigation, it is **certain / near certain** that there would be a **significant adverse effect** on scattered trees at a **local** level.

Hedgerows

7.4.19 As a result of the cut and fill strategy required to facilitate the development (i.e. to create appropriate development platforms), the majority of the Site will be subject to some level of excavation / soil movement (see Chapter 10 and its supporting Appendices). As a result, the majority of hedgerows will be lost to the development; however, allowances have been made for the translocation of species-rich hedgerows, wherever possible, to create a new hedgerow running along the north-west site boundary. In the absence of mitigation, the loss of hedgerows would result in a **certain/near certain**, **significant adverse effect** at a **Local** level.

7.4.20 Across the detailed Phase 1 residential area, some mixed native hedgerows are proposed along the boundaries of landscape areas. Similar proposals are present within the strategic green spaces, particularly along the east-west green corridor which links the north-eastern drainage area to the roundabout which facilitates access to the southern area of the Phase 1 residential development. However, these are typically split into smaller lengths of hedgerow, connecting to hedgerows or habitats types, in comparison to the longer hedgerows currently present on site.

7.4.21 Though the translocation of species-rich hedgerows is proposed, along with some further native hedgerow planting, it is considered **certain / near certain** that there will be a **significant negative impact** upon hedgerows at a **Local** level, without the adoption of further mitigation[2].

Running Water

7.4.22 With reference to the drainage strategy plan (Chapter 11) and the Parameters Plan (Figure 3.1), a small section of the stream located within the woodland areas to the north of Hermit Lane is likely to be culverted, to facilitate the creation of a development platform. This section measures approx. 75 m, with the total length of running water on Site measuring over 500 m. As such, approx. 15% of the open running water habitat on Site will be lost, with 85% retained.

7.4.23 In the absence of mitigation there is potential for construction activities to cause pollution of running water (e.g. via chemicals or sedimentation).

[2]Planning Portal (2016) Application for Hedgerow Removal Notice, Available Online at: https://ecab.planningportal.co.uk/uploads/1app/guidance/guidance_note-hedgerow_removal_notice.pdf [Accessed May 2021]

7.4.24 As such, it is considered **probable** that there will be a **significant adverse effect** upon running water at a l**ocal** level.

Bats

7.4.25 As a result of the cut and fill exercise required to make development of the Site feasible, the majority of habitats on Site will be lost, including habitats suitable for roosting and foraging / commuting bats.

7.4.26 Based on the Parameters Plan (Figure 3.1), 18 trees and three buildings with bat roost suitability are anticipated to be lost the development. Surveys conducted in support of the application found none of these features supported roosting bats. In the absence of mitigation, the loss of these potential roost features would be **permanent** but would have a **non-significant** effect at a **local** level.

7.4.27 Though no bat roosts were identified on Site in 2018 or 2020 (Appendix 7.3), bats can frequently move between roosts, particularly within trees. It is possible that bats could use trees within the Site on occasion, and if a roost were destroyed or bats killed or injured, this would result in a **legal offence**.

7.4.28 The loss of hedgerows, a small area of woodland and unlit pastoral fields will reduce the availability of suitable bat foraging and commuting habitat across the Site, either via complete loss or severance of existing commuting routes. Whilst the proposed strategic green spaces and drainage infrastructure areas shown in the Parameters Plan will likely support foraging / commuting bats once established, it is likely that the cut and fill exercise across the Site will take several years. In the absence of reinstatement/replanting, early re-colonisation communities (pioneer/ephemeral/ruderal herbs and grassland) of some invertebrate interest would likely establish in areas over this time in the absence of targeted habitat creation, this cannot be quantified/guaranteed.

7.4.29 Detailed plans for the Phase 1 scheme show that corridors of habitat with structural diversity, and invertebrate supporting native species would be created here. Alongside residential gardens this would likely support existing populations of the more, light-tolerant bat species, such as common pipistrelle. Translocation of existing hedgerow would be utilised to promote the retention / enhancement of commuting corridors, where possible, though hedgerow removal and lighting would result in a short-medium term effect of habitat corridor loss.

7.4.30 The landscaped areas of Phase 1 and the wider site would take time to be planted / establish. As such, it is considered **probable** that there would be **significant adverse effects** upon foraging / commuting bats at a **local** level over the construction period.

Birds

7.4.31 Construction works will result in the loss of suitable breeding and foraging habitat for bird species (i.e. hedgerows, scrub, woodland, scattered trees and farmland used by ground-nesting birds) and could result in a **legal offence** if any active nests are destroyed or damaged.

7.4.32 Given the likelihood that earthworks on Site will continue over several years, it is likely that suitable habitats may be absent from the Site over a medium-term.

7.4.33 Retention of the majority of woodland would retain suitable breeding habitat for some of the bird species recorded. Garden birds recorded will also likely utilise

surrounding gardens for foraging / breeding. Habitat loss elsewhere on Site will likely result in reduced breeding habitat availability in the medium-term.

7.4.34 Though farmland habitats similar to those currently on Site are present in the surrounding areas (e.g. some to the north, west and south), farmland birds (i.e. lapwing, grey partridge, skylark and yellowhammer) will be subject to greater stresses as a result of the habitat losses. However, some of these may continue to use the Site for breeding during earthworks and / or whilst development platforms are left finished but awaiting development. As outlined above, any newly created habitats would take time to establish and subject to disturbance effects around construction activities.

7.4.35 As such, it is considered **probable** that there will be **significant adverse** effects upon birds at a **Local** level.

Great Crested Newts (GCN); Reptiles & Badger

7.4.36 In the absence of mitigation Badgers, reptiles and GCN were all considered likely absent from the site and of negligible importance; however, if individuals of these species were to use the site, then construction activities (e.g. site clearance and earthworks) have the potential to harm/disturb individuals of these species and/or GCN/Badger habitats, which would constitute **a legal offence**.

Non-native Invasive Species

7.4.37 An historic stand of Japanese knotweed was identified on the western Site boundary, which appeared to have been subject to treatment works (Appendix 7.1). Though no fresh growth of Japanese knotweed has been observed on Site, it is possible that rhizomes or other sub-surface growth may be present. In the absence of mitigation it is possible that Japanese knotweed rhizomes or other plant material could be spread away from the Site. As such, it is possible that **a legal offence** could be committed, in the absence of mitigation measures.

Operational Impacts

7.4.38 This section predicts and characterises the likely operational phase impacts on the sensitive ecological features identified in the absence of additional mitigation.

Statutory Designated Sites - SACs and SPA

7.4.39 The three statutory designated sites are all located over 8 km from the Site. Whilst it is possible that residents from the proposed development could visit these sites, it is considered likely that this would not result in a notable increase of visitors to these sites, given their distance, the size of the development relevant to the existing local populations around these sites, and the availability of open space proposed within the development and in the surrounding areas of Barnsley.

7.4.40 With regards to the commercial area of the development, Class uses listed under the planning application include B2 (General Industrial), B8 (Storage or Distribution) and E (Commercial, Business and Service). These class uses exclude heavy industrial process which would have more potential to result in detrimental impacts upon the amenity of the area by reason of noise, vibration, smell fumes, smoke, soot, ash, dust or grit. With reference to the air quality assessment (Chapter 13), it is considered unlikely that the commercial element of the Site will result in negative impacts upon the statutory designated sites.

7.4.41 As such, it is considered **certain / near certain** that there will be **no significant negative effects** upon the SACs / SPA as a result of the operation of the proposed development.

Non-statutory Designated Site – LWS

7.4.42 Redbrook Pastures LWS is located directly adjacent to the east of the Site and is designated for its ridge and furrow cultural associations, grassland swards and mature trees and hedgerows. The half of the LWS located north of Hermit Lane is accessible to the public with a Public Footpath running through it. The citation notes that these northern areas of the site were grazed with scrub encroachment resulting in low species diversity. A change in land management practices was not possible at that time, and this was considered necessary in order to ascertain whether the grassland here had greater potential value.

7.4.43 Biodiversity interests were more concentrated to the southern half of the LWS, where there is no public access and no obvious desirable through-fare. Better neutral grassland species diversity was recorded here alongside its supporting value to adjacent woodland and hedgerows. Adverse ecological effects from public use may therefore only be a relevant consideration in terms of the potential future value of this area, given the poor current condition of the LWS here

7.4.44 Increased disturbance effects and recreational pressures along the footpath would be expected from the proposed development, though footfall is likely to be for pedestrian commuting and short in duration, especially when considering its small size relative to the accessible strategic greenspace running through the development, particularly in adjacent areas. The southern section lies adjacent to a school and will therefore already be subject to existing levels of noise disturbance and the development layout provides for an extension of woodland and other habitats that will provide buffering from the development. Trespassing is considered unlikely in this location.

7.4.45 Overall it is considered **probable** that there would be **no significant adverse effect** upon Redbrook Pastures LWS.

7.4.46 Hugset Wood LWS is located 0.55 km west of the Site and is within walkable distance of the Site, via approx. 0.9 km of Public Footpaths. It is likely that some residents would access this LWS for recreation/through fare; however, this is considered likely to be less individuals than those that may access Redbrook Pastures LWS. Given the size of Hugset Wood LWS, the fact that woodlands are generally robust environments, and that the citation notes the majority of the site is largely unmanaged plantation woodland increased recreational pressure resulting from the proposed development is not considered likely to have a notable adverse effect. As such, it is considered **probable** that there would be **no a-significant effect** upon this LWS.

7.4.47 The remaining four LWS are approx. 1 km from Site, or greater. Although residents could access these sites, this would only likely be a small number of people, given the availability of open space proposed within the development and in the surrounding areas of Barnsley. As such, it is considered **probable** that there would be **no significant effect** upon these LWSs.

Broad-leaved Semi-Natural Woodland

7.4.48 Public access is proposed through much of the proposed green space via footpaths and boardwalks / bridges. Though some habitat areas will remain free from public walkways, there is the potential for members of the public to stray from the

walkways, which could reduce the area of undisturbed habitat for wildlife to utilise. However, the existing woodland onsite is small in extent, narrow, dissected by a public footpath and Church Lane and already located in an urban fringe setting. The significant increase in woodland cover throughout the strategic greenspace areas proposed, including areas around the commercial development, would ultimately result in an increase in the area of woodland cover, including areas of potential refuge, woodland edge and woodland corridor habitats. This would however take time to develop in character and value. If not designed and managed appropriately, planting may fail in areas, and overall have limited biodiversity value.

7.4.49 It is considered **probable** that there would be a **significant adverse effect** upon broad-leaved semi-natural woodland at a **local** level.

Broad-leaved Scattered Trees

7.4.50 Should any broad-leaved scattered trees be retained during construction, it is considered likely that these could be subject to some operational effects (e.g. tree climbing by residents); however, this is considered unlikely to significantly adversely affect these features. The landscaping plans associated with the residential areas of Phase 1, the road and the wider proposed development site demonstrate that, in addition to the proposed woodland, a large number of street trees and landscape trees and a community orchard are proposed. If a majority of immature specimens, non-native species and a limited diversity of species were employed, then the ecological value of these may be limited. It is considered **probable** that there would be **significant adverse effects** upon broad-leaved scattered trees at a **local** level.

Hedgerows

7.4.51 In the absence of any mitigation, all hedgerows are considered likely to be lost to the proposed cut and fill works, with the exception of the proposed length of hedgerow to be translocated to the western boundary of the Phase 1 residential area. Without appropriate management, the translocated hedgerow could also fail. Limited areas of proposed mixed native hedges are also proposed. Poor management of exiting and newly created hedgerows could lead to their biodiversity value being low. As such, **a significant adverse effect** upon hedgerows, at a **local** level, would be **near certain**.

Running Water

7.4.52 Appropriate foul and surface water drainage strategies are proposed for Phase 1 and would be required for the wider development, to meet standard requirements during operation, so that potential pollutants (e.g. chemicals from vehicles, road salt, etc) would not significantly affect controlled, running water.

7.4.53 There would likely be an increase in direct disturbance and littering from the proposed increase in local residents; however, the development would inherently remove the more notable negative effects currently occurring through livestock access.

7.4.54 Due to an overall reduction in this habitat and increased recreational pressures, as a precautionary approach, effects upon running water through the operational phase is considered **probable** to be **significant adverse** at a **local** level.

Bats

7.4.55 Once operational, the strategic green space and drainage infrastructure areas would be likely to provide suitable foraging habitat and commuting routes for bats. Detailed landscaping plans for the Phase 1 area demonstrate that structural diversity would be created during construction. The value of these areas would be reduced by too-high or too-low intensity management, over time. As publicly accessible areas, some maintenance of these would be expected.

7.4.56 Excessive use of artificial lighting across the Site (e.g. high intensity flood lighting of roads and footpaths) could have negative impacts upon bats, severing commuting corridors and/or rendering suitable foraging habitat unsuitable / unfavourable.

7.4.57 In the absence of mitigation, it is **probable** that there would be a **significant negative effect** upon bats.

Birds

7.4.58 The loss of farmland across the site is likely to negatively impact upon farmland species, including four previously recorded breeding on Site. These are lapwing (up to five breeding territories previously recorded), skylark (up to six territories), grey partridge (one territory) and yellowhammer (one territory). Though these species are unlikely to breed on Site during the operational phase, these impacts are not considered to be significant. The low numbers of grey partridge and yellowhammer are considered likely to be supported by other farmland habitats in the surrounding area. The same is considered likely for skylark and lapwing; however, these species may be pushed further from the Site in search for suitable/vacant breeding sites.

7.4.59 Retained and newly created habitats comprising trees and shrubs would likely be beneficial for the majority of nesting and foraging bird recorded on Site. Lower-level planting (e.g. grassland and hydroseeded areas) would also attract invertebrate species which in turn would provide additional foraging resource for birds.

7.4.60 The proposed drainage infrastructure areas will likely increase the availability of wetland habitat on Site, increasing the suitable habitat available for bird species associated with these habitats (e.g. reed bunting, sedge warbler, reed warbler and waterfowl). As such, there is likely to be an increase in the number of wetland species utilising the Site during the operational phase, in comparison to the Site's current assemblage.

7.4.61 Overall a change in the assemblage of birds would be expected, with an overall increase in garden / woodland edge and wetland bird species and a reduction in open farmland bird species onsite.

7.4.62 It is considered **probable** that there would be **no significant negative impacts** upon birds.

Great Crested Newts (GCN), Reptiles and Badger

7.4.63 Consideration of legal compliance for these species during operation is not considered to be relevant to this stage of the assessment.

Non-native Invasive Species

7.4.64 In the instance that the Japanese knotweed was not removed from Site, it is possible that stands could re-grow and be spread throughout and off Site during the operational phase.

7.4.65 In the absence of mitigation, it is therefore possible that a continuation of **legal offences** could occur.

7.5 Additional Mitigation, Compensation and Enhancement Measures

7.5.1 The following measures are proposed in order to address significant adverse impacts that have been predicted likely to occur, as discussed above.

Construction

Non-statutory Designated Sites - LWS

7.5.2 Given the proximity of Redbook Pastures LWS, an Ecology Construction Environmental Management Plan (EcoCEMP) will be created prior to any works on land adjacent to this LWS. The EcoCEMP will refer to general mitigation measures to be implemented, including a best practice dust mitigation plan, as proposed within air quality assessment (Chapter 13). Appropriate methods will also be adopted to prevent accidental damage of the LWS habitats, (e.g. protection of tree root protection areas with reference to British Standards and avoiding adverse adjacent materials storage or laydown).

7.5.3 The artificial lighting scheme for construction will also be designed in consultation with an ecologist to avoid/minimise the potential for illuminating Redbrook Pasture LWS habitats during night-time hours. Where artificial lighting is essential, it will be minimised in duration and extent and directed only towards the active works area, making use of cowls / hoods, as appropriate.

7.5.4 With the implementation of an EcoCEMP it is considered that there will be **no significant effects** upon non-statutory designated sites during construction and the confidence level is **near-certain**.

Habitats

7.5.5 The strategic greenspace and drainage infrastructure areas will be planted and managed to create biodiverse and ecologically valuable habitats of a nature as shown within the indicative landscape masterplan (see Chapter 6, Figure 6.8). New woodland areas and scattered trees will be planted on site, comprising native species of local provenance. Species composition will allow for a mix of flowering, fruit and seed-bearing tree species. Planting will include a mix of approaches including saplings and heavier standard trees (including extra heavy standards) to increase structural and ecological diversity and reduce the time for woodland and copses (in part and as a whole) to mature. The proposed planting would result in a considerable increase in woodland and trees providing habitat corridors running through and around the site.

7.5.6 Artificial lighting which could illuminate retained or newly planted habitats will be minimised and avoided, where possible. Where artificial lighting is essential, measures will be adopted to reduce negative impacts upon habitats. Connected dark corridors (subject to <1lux lighting levels) will be created, particularly linking valued habitats associated with the drainage features along the eastern boundary

of the site, and through the centre of the site leading from the new link road. Lighting schemes will be designed in consultation with an ecologist to maximise opportunities for unlit areas and minimise potential adverse effects from light-spill.

7.5.7 Prior to translocation of any species-rich hedgerows to the western Site boundary, an appropriate method statement will be prepared by a landscape architect (or similar). This method statement will detail methods of hedgerow removal (including root balls) and re-establishment along the western Site boundary, as well as suitable timings and any additional measures required to minimise failures. Monitoring and remedial measures will be detailed in the event that hedgerow plants fail to re-establish, such as replacement planting, to maintain an 'intact' hedgerow.

7.5.8 New hedgerows will be planted (where necessary additional to that currently shown on the Landscape Masterplan) within the Strategic Green Space areas of the outline application areas, and within the associated residential and commercial development areas. This additional planting will help to mitigate for lost length of species-poor hedgerows across the Site. Hedgerow planting will seek to increase connectivity across the Site, particularly through and around the developed areas. The total length of native, species-rich hedgerow created will equal over 2 times the length of species-rich hedgerow presently onsite. Hedge planting will include more mature specimens to reduce establishment time. This will be complemented with thickets of mixed native shrubs and woodland edge habitats.

7.5.9 Any new hedgerow planting will comprise a mixture of native species. The use of double-row hedgerow planting will also be employed where possible, creating thicker hedgerows of greater commuting, foraging and refuge benefit to protected / notable fauna.

7.5.10 The detention ponds will primarily comprise large open areas of wet meadow grassland, complemented by more traditional meadow planting along woodland interface areas. Close-mown amenity grassland areas will be minimised in favour of such more naturalised habitats which will dominate to provide greater space for nature and associated local wildlife benefits for species such as invertebrates, bats, birds and hedgehog.

7.5.11 Measures to prevent negative impacts upon retained and newly created habitats will be detailed within the EcoCEMP. Throughout construction works, tree protection zones (in line with *BS5837:2012 Trees in Relation to Design, Demolition and Construction*) will be established around any retained trees/woodland. The EcoCEMP will refer to measures to minimise dust, pollution, noise, lighting and other potentially adverse effects. The EcoCEMP will also detail measures to be adopted to avoid pollution and minimise potential sediment loading of the onsite streams. This will cover general construction works and more specifically the culverting of the 75m stretch north of Hermit Lane.

7.5.12 A Habitat Landscape Management Plan (HLMP) (or similar) will be produced, to detail methods of habitat establishment and any specific measures to be adopted during establishment which could benefit biodiversity on the Site (e.g. planting of new hedgerows in double-rows, rather than single). This will include information regarding habitat management to maximise gains for biodiversity.

7.5.13 Whilst there will be a loss of large areas of agricultural land on the site, the proposed habitats to be created, as outlined within the landscaping plans and further detailed above, are considered to be of notably greater potential biodiversity and supporting ecological value to local wildlife, once established.

7.5.14 Due to the size of the site, it will be brought forward as a multi-phased development, though ground works may be required pervasively at the outset for to achieve appropriate levels for the development platforms and drainage infrastructure. The majority of habitats may therefore be lost to bare ground at the outset, with replacement landscaping coming forward on a plot-by-plot basis over the duration of the construction period.

7.5.15 Whilst some of these habitats will develop ecological value relatively quickly, (e.g. allotments, wet meadows, permanent water, wet scrub and native shrub planting, traditional wildflower meadows, transplanted hedgerow) others will take considerable time to develop into ecologically valuable habitats (e.g. street, landscape and orchard trees; proposed native hedgerows; and, woodland planting).

7.5.16 In view of the above it is considered that <u>during the construction period</u> there will be:

7.5.17 **No significant effects** upon broad-leaved woodland **near certain** at a **local** level as this habitat will be largely retained and protected from construction effects through an EcoCEMP.

7.5.18 **Significant negative effects** upon scattered trees and hedgerows **near certain** at a **local** level as these will largely be lost from the site, with replacement planting in phases and these will take time to establish ecological value.

7.5.19 **Significant negative effects** upon running water **probable** at a **local** level, due to the loss of 20% of this habitat resource onsite.

<u>Bats</u>

7.5.20 Though no bat roosts have been identified on Site (Appendix 7.3), 18 trees and three buildings with bat roost suitability will be lost to the proposed works.

7.5.21 Given the potential for irregular use of bat roosts, particularly those within trees, the following measures are recommended:

- Update bat roost surveys (i.e. external / internal inspections and dusk emergence / dawn re-entry surveys) should be undertaken on trees and buildings every two years, from May 2022 onwards - when current baseline information is considered to become 'out-of-date'). Update surveys can be focussed on the plots (and directly adjacent areas) which are likely to come forward within the following two-year period. Should any bat roosts be identified, it may be necessary to apply for a European Protected Species Mitigation Licence (EPSML) from Natural England.

- Prior to building demolition or tree felling, an appropriately licensed ecologist should be present to check any potential roost features for bats. If any bats are identified, it will be necessary to pause works on that given buildings / tree and attain a EPSML. Where no bats are identified, demolition / felling works may proceed.

7.5.22 To mitigate for the loss of suitable bat roost features, a mixture of bat roosting boxes will be installed on Site. A combination of integral and woodstone-style, tree-mounted boxes would be provided, to confer roosting opportunities for multiple bat species and to provide a greater lifespan of the proposed mitigation.

7.5.23 A total of 50 bat boxes will be installed within new buildings or areas of retained woodland. An ecologist will be consulted to confirm detailed box specifications, which will be subject to the location of the plot to be developed at any given time.

7.5.24 Given the loss of connective features across the Site which are used by commuting and foraging bats, the Strategic Green Space and Drainage Infrastructure areas will be planted with a diversity of habitats of benefit to foraging / commuting bats. Providing several habitat types (e.g. woodland, wildflower areas, hedgerows, etc) which will help to provide varying vegetation structure through these areas, benefiting both foraging and commuting bats. The provision of permanently wet areas within the Drainage Infrastructure areas would also benefit foraging bats by attracting invertebrates.

7.5.25 In addition, the planting of a variety of habitats within development areas, will help to maintain bat foraging / commuting corridors across these built-up areas. As above, a variety of habitat types would be used for foraging / commuting bats and could including hedgerows, shrubs, grassland and tree planting. The inclusion of hedgerows will be particularly beneficial for bats by creating linear features for commuting.

7.5.26 The lighting plan for the construction phase will be designed in consultation with an ecologist, to make sure that potential effects upon bats are considered and avoided/minimised. Where use of artificial lighting is essential, direct illumination of retained habitat (e.g. woodland) will be avoided by directing lighting away from these areas and towards the works areas (cowls and hoods will be used to assist with direct lighting). Where possible, lighting will also be time or motion triggered, to reduce any unnecessary use of artificial lighting.

7.5.27 Use of less ultra-violet light emitting bulbs, such as metal halide or high-pressure sodium, will be employed to reduce the potential impact of artificial lighting on bat species.

7.5.28 The above mitigation will help to reduce potential adverse effects upon bats during construction. However, due to the potential for pervasive removal of habitats and unknown timescales on landscaping reinstatement. A **significant negative effect** upon bats at a **local** level during construction is **probable**, assuming habitat removal and reinstatement is not staggered.

Birds

7.5.29 In order to prevent an offence under the W&CA, where possible, all vegetation clearance and ground disturbance works will be undertaken outside the breeding bird season (which typically runs from March – September, inclusive). If this is not possible, and areas are to be cleared during this time, a suitably qualified ecologist will undertake a nesting bird check at least 48 hours prior to the removal of the vegetation / ground clearance, in order to confirm the presence / absence of any active nests.

7.5.30 If any active nests are found, a buffer zone will be established around the nest and it will be left *in-situ* until the young have left the nest. Note that the size of buffer zone required is species-specific; therefore, it may be necessary to adjust the timing, approach and sequence of works proposed in areas adjacent to the buffer zone, until the fledglings have left the nest.

7.5.31 Given the loss of breeding habitats, in the form of hedgerows, scrub and trees / woodland, a variety of bird nesting boxes will be incorporated into the scheme. A combination of integral and woodstone-style, tree-mounted boxes will provide a

greater lifespan of the proposed mitigation. It will also allow for provision of nesting opportunities for multiple species (e.g. swifts in buildings and small-hole nesting birds, such as tit species, within tree mounted boxes), which will be further supported through incorporating a variety of nest box designs (e.g. small-hole nest boxes, open-fronted boxes, sparrow terraces etc).

7.5.32 A total of 100 bird boxes will be installed within new buildings or areas of retained woodland. An ecologist will be consulted to confirm detailed box specifications, which will be subject to the location of the plot to be developed at any given time.

7.5.33 In addition, woodland, trees and shrubs once established, will also provide additional resource for nesting birds. The incorporation of species with good yields of berries, seeds and nectar will also support foraging birds, as will the incorporation of open grassland areas (particularly those inclusive of wildflowers).

7.5.34 The above mitigation will help to reduce potential adverse effects upon birds during construction. However, due to the potential for pervasive removal of habitats and unknown timescales on landscaping reinstatement. A **significant negative effect** upon birds at a **local** level during construction is **probable**, assuming habitat removal and reinstatement is not staggered.

<u>Great Crested Newt, Badger and Reptiles</u>

7.5.35 The EcoCEMP will include precautionary measures for the clearance of vegetation over 10 cm tall and associated works within 250m of any pond that hasn't been subject to prior eDNA surveys to confirm the absence of GCN. Pre-cautionary measures will include:

- Prior to removal of any vegetated areas over 10 cm high, a fingertip should conducted by a suitably experienced ecologist. Any tall vegetation (e.g. hedgerows, tall grass etc) cleared using hand tools (e.g. strimmer / chainsaw), until such a height that the area can be confidently searched by the ecologist for GCN.

- Any cut vegetation in these areas to be removed, so as not to create potential new areas of suitable refugia with the development area. Felled trees / shrubs could be used to create refugia piles within areas of retained woodland.

- Guidance for the coverage/checking of excavations, the storage of materials and water management, so as to reduce the potential of harm to GCN and reptiles. Any pipework should also be capped, to prevent animals becoming trapped.

- A toolbox talk given to site staff to make them aware of wildlife legislation, GCN/reptile/badger identification and in the unlikely event that a GCN, reptile or badger/badger sett is found/suspected, all works on Site should cease and advice be sought from the ecologist.

- Potential refugia (e.g. dead vegetation / brash piles) present to be cleared outside of the GCN/reptile hibernation period (i.e. avoid October – February, inclusive).

- Directional strimming of vegetation within habitat suitable for reptiles (i.e. semi-improved grassland and tall ruderals areas) to a sward height of approx. 150mm. Vegetation is to be strimmed towards other areas of retained habitat on or directly adjacent to site; and

- Following directional strimming, a check of the habitat by an ecologist before stripping of the remaining habitat area (under supervision of the ecologist).

- a pre-commencement badger survey will be undertaken prior to work taking place on Site. The survey will cover the works area, plus a buffer distance of 50 m (where accessible) and will take place approximately three months prior to the commencement of works on any phase.

7.5.36 The above mitigation measures are proposed on a precautionary basis and **No Legal Offenses** relating to GCN; reptiles or badger are considered **near certain**.

7.5.37 Additionally, the newly created habitats will offer a range of opportunities for amphibians; reptiles and badger on the site, particularly along the western boundary where the drainage infrastructure is to be created and within less accessible woodland areas.

Non-native Invasive Species

7.5.38 Prior to any works taking place on Site, an updated invasive species walkover survey should be undertaken, to confirm the presence / likely absence of any non-native invasive species, additional to the historic Japanese knotweed stand known to be present on the western Site boundary.

7.5.39 Prior to any works within 8m of the historic Japanese knotweed stand on the western Site boundary, an invasive species specialist should be consulted to confirm that stand continues to show no signs of new growth and to provide any recommendations for additional treatment works (e.g. excavation of potential infested soil) with the aim of eradicating the species. This check should be undertaken between April – September (inclusive) but ideally during mid-summer (i.e. June / July).

7.5.40 A non-native invasive species management plan should also be completed for the Site, detailing any eradication / treatment measures and any pre-cautionary constructions measures to prevent spread of invasive species (e.g. adoption of wheel washing for Site vehicles).

7.5.41 With the treatment of invasive plant species on Site and the implementation of an invasive species management plan it is considered that there will be **no legal offences committed** and **no significant effects** upon habitats within the Site or outside of the Site, and the confidence level is **certain / near certain**.

Operation

Statutory Designated Sites – SACs and SPA

It is considered certain / near certain that there will be no significant effects upon any statutory designated sites, within 15 km of the Site, during the operational phase of the proposed development. As such, no additional mitigation measures are required.

Non-statutory Designated Sites – LWS

7.5.42 In order to further reduce the potential for effects upon Redbrook Pastures LWS as a result of recreation/through fare during operation, interpretation board(s) will be installed at the access point to the LWS from the Site. This board(s) should include details regarding the LWS, citing its reason for designation and the importance of using the public footpath through the LWS in a considerate manner. It is

recommended that the boards also advise member of the public to stick to the public footpath only.

7.5.43 A waste bin and dog waste will also be provided at the access point to the LWS from the Site, to reduce the potential for littering across the LWS.

7.5.44 With the implementation of the above mitigation there will be **no significant effects** upon the LWS and the confidence level is **near-certain**.

Habitats

7.5.45 Newly created habitats on site will require appropriate management and maintenance throughout the operational phase of the development, to prevent succession and maximise/maintain ecological value. Any retained habitats will also benefit from appropriate maintenance. As such, the proposed HLMP will detail the management techniques to be adopted for retained and created habitats during the operational phase. Management in the strategic greenspace and drainage areas will focus upon wildlife value with low intensity management, for example:

- Encouraging hedgerows to grow tall and bushy with cutting on a rotational to maintain hedgerow provision;
- Grass mowing timed to allow loss of flowering, with tall grassy areas maintained for invertebrate interests;
- Areas of permanent standing water created to provide a range of planted and naturally colonising open water habitats and managed for varying successional stages;
- New drainage ditches planted with emergent vegetation in areas where more permanent standing water will be present, with each embankment cut rotationally at low intensity; and,
- Woodland thinned and coppiced, with brash piles created for wildlife.

7.5.46 This HLMP will provide a management schedule for at least the first five years, and subsequently the next twenty-five years of operation.

7.5.47 A schedule for monitoring the condition of retained, translocated and newly created habitats should also be included within the HLMP, along with remedial measures and the triggers for such measures.

7.5.48 To reduce the impact of recreation upon habitats during the operation phase, litter and dog waste bins will be provided across the site, particularly throughout the Strategic Green Space areas. Bins will be maintained end emptied regularly. Fences and signage will also be erected to deter access to the retained woodland and stream at points of high potential access likelihood, e.g. where footpaths cross through it. These will be maintained in the short-term, until habitats within the strategic greenspace/drainage infrastructure areas have had time to developed sufficient character to reduce (and offset) potential recreational use of the woodland. Signage will also seek to encourage ecologically sensitive/responsible use of greenspaces throughout the site.

7.5.49 The development would intrinsically result in the removal of livestock currently causing negative effects on this habitat through regular trampling/access. The HLMP will further outline measures to increase its biodiversity value and improve the physical and vegetative character of the streams, including:

- Information boards to make the public aware of the ecological value of the stream and deter littering, and deleterious behaviour and promote any access to the stream to be constrained to targeted areas at footpath crossing places;

- Signage/fencing to deter public access to selected, degraded sections of the stream, where considered appropriate/necessary to enable natural regeneration of associated bankside stability, scrub and ground-flora. This would be monitored, with measures employed/retracted as appropriate;

- The establishment of grassland and/or planting of suitable tree and shrub species along the banks/bank-top, as appropriate, to reduce bank erosion/sediment loading and to benefit a range of associated species including invertebrates, birds and mammals;

- The introduction of deadwood features across the bank face and channel, of benefit for invertebrates, soil chemistry and hydraulic feature richness.

- The introduction of rocks and boulders along the stream channel, to add to the mix of water surface flow types, as well as the removal of artificial reinforcements (concrete) to be substituted by suitable soft-engineering solutions to prevent erosion whilst enabling colonisation of vegetation.

7.5.50 The above measures applied to the retained open running water habitat, in combination with the removal of livestock access, is considered likely to achieve notable ecological gains that would help to offset the reduction in length of this habitat onsite. It would also aim to benefit biodiversity within the similar area of offsite running water adjacent and to the north of the site.

7.5.51 The proposed development will lead to a decrease in the area of vegetated land across the site, with agricultural areas, long linear hedgerows and some wider features of local biodiversity value being lost. This will result in some significant negative effects in the short and medium term, particularly if ground works require the removal of all habitats at the outset and given the timing of habitat reinstatement is unknown. Some habitats will take longer to develop value, than others. However, through the implementation of an appropriate HLMP, the proposed landscaping scheme will result in the creation of a much broader range of valued habitats, with higher associated intrinsic ecological value overall, in the long term. These habitats will form a connected network through the site. A lighting scheme devised in consultation with an ecologist will enable dark corridors to be maintained within this network. The HLMP and landscaping / planting plans will prescribe the use of native species of ecological value to maximise the biodiversity and wider supporting value of habitats created. The HLMP will further prescribe ongoing management that is targeted towards biodiversity benefits during operation.

7.5.52 In view of the above, <u>during the operation period</u>:

- It is considered **probable** that there would be a **significant adverse effect** upon broad-leaved semi-natural woodland at a **local** level in the short term but **near certain, no significant effects** upon broad-leaved woodland in the long-term.

- **Significant negative effects** upon scattered trees **near certain** due to loss during construction, would be countered in the long-term (during the operational phase) through the maturing of a much larger number of

planted native trees, leading to **near certain, no significant effects** upon scattered trees in the long-term.

- **Significant negative effects** upon hedgerows **near certain** at a **local** level in the short term but **no significant effects** upon hedgerows **probable** in the long-term.

- **Significant negative effects** upon running water **probable** at a **local** level in the short term but **no significant effects** upon running water **probable** in the long-term.

7.5.53 Overall there are considered to be **no significant effects** upon habitats at a **local** level in the long-term.

Bats

7.5.54 During the operational phase, bat boxes installed in publicly accessible areas on Site will be subject to checks and maintenance (including cleaning, where required) at least once every two years. Any damaged or missing boxes will be repaired / replaced. Droppings will be cleaned out of boxes, as will any bird nesting materials (providing these are inactive – any active nests will be left *in situ* until the chicks have fledged).

7.5.55 During maintenance / repair works, any evidence of bats or actual presence, will be recorded by the ecologist and reported to the person(s) overseeing management of the Site.

7.5.56 The operational phase lighting scheme will be devised in consultation with an ecologist, and designed to be sensitive to bats. In particular, illumination of the strategic green space and drainage infrastructure areas will be minimised/avoided where possible and dark corridors will be created to enable bats to commute and forage across the site.

7.5.57 With adoption of the above mitigation, there are considered to be **no significant effects** upon bats at a **local** level in the long-term. The confidence level of this is **near certain**.

Birds

7.5.58 During the operational phase, bird nesting boxes installed in publicly accessible areas on Site will be subject to checks and maintenance (including cleaning, where required) at least once every year. Maintenance will be undertaken outside of the nesting bird period (i.e. avoid March – September, inclusive) to reduce the risk of encountering any nesting birds. Any works required during the breeding bird period should be preceded by a nesting bird check by an ecologist. Any active nests identified should be left *in situ* until the chicks have fledged (to be confirmed by an ecologist).

7.5.59 Providing no active nests are present, any damaged or missing boxes should be repaired / replaced. Old nesting material / debris should also be removed and boxes can be cleaned with boiling water, where required.

7.5.60 With adoption of the above mitigation, there are considered to be **no significant effects** upon birds at a **local** level in the long-term. The confidence level of this is **certain / near certain**.

Other species including Great Crested Newts (and other amphibians); Reptiles and Badger

7.5.61 With adoption of the mitigation and enhancements, already outlined in this Chapter, no legal offenses as considered likely in relation to GCN, reptiles and badger. The habitats proposed within the Strategic Green Space and Drainage Infrastructure areas will provide a range of habitats of potential benefit to these species, should they use the site in the future. In particular, the addition of woodland offers opportunities for badger and the network of permanent open water (ponds) and wet meadows will provide potential habitat for amphibians and reptiles. Amphibian-friendly gulley pots will therefore be used along roads bordering the western extent of the development, where the network of wet habitats will be created.

7.5.62 'Hedgehog highways' will be incorporated across the scheme, to facilitate movement of hedgehogs throughout built areas, as well as the Strategic Green Space. These should comprise gaps left in the base of fences, measuring approx. 13 cm x 13 cm. Cut material from shrubs or trees will be retained and re-located into woodland areas on site where appropriate. Log / brash piles from such material will be used to create refuges and hibernation features that may be used by reptiles, amphibians, small mammals and invertebrates on site.

Non-native Invasive Species

7.5.63 Following the mitigation detailed for the construction phase, it is considered that the Site will be absent of non-native invasive species. As such, no further mitigation measures are considered to be required for non-native invasive species during the operational phase.

Residual Effects

7.5.64 Table 7.3 provides an assessment summary of this chapter, for those ecological receptors that were considered may experience significant effects as a result of the proposed development.

7.5.65 Additional mitigation has been specified for the development where it could not be included in the design. The anticipated residual environmental effects, following the implementation of the proposed mitigation, compensation or enhancement measures, are also summarised within Table 7.3.

7.5.66 Overall, a number of ecological receptors have been assessed as subject to probable significant adverse effects over the short – medium term, based on the assumption that habitats across the site will be lost at the outset due to earth works to create development platforms. Mitigation has been proposed to reduce further associated adverse ecological effects, where possible, including ecologically sensitive working methods (via an EcoCEMP) and lighting scheme. Should it be possible to stagger habitat loss to these works and create habitats within the Strategic Green Space and Drainage Infrastructure areas early, then the significance and duration of adverse effects will be greatly reduced.

7.5.67 There will be an overall reduction in greenspace, with a move from open, intensively managed farmland to residential and commercial areas interspersed with connected green corridors of higher value habitats and a network of wet meadows and standing water. These areas will be subject to targeted management to promote their ecological value alongside public access through a habitat and landscape management plan. A sensitive lighting scheme will also be adopted to maintain dark corridors and reduce light spill. Overall, this is considered likely to result in a change in associated species assemblages, (from agricultural, to

woodland, grassland, wetland and wider urban fringe associated species) with associated ecological enhancements, once habitats become established, in the longer term.

7.5.68 Once the mitigation (detailed above) and the measures to be detailed within the EcoCEMP and HLMP are delivered, it is **probable** that the proposals will have **no significant adverse residual impacts** on the ecological receptors assessed.

Cumulative Effects

7.5.69 The following developments / applications have been considered within our review of potential cumulative impacts:

Application Nº. 2020/0977: Residential development of 140 dwellings with associated landscaping, infrastructure and open space

7.5.70 Located directly adjacent to the north-east of the Site, this development is of a similar nature of proposed development on the Site and will result in the loss of similar habitats (i.e. improved grassland and hedgerows).

7.5.71 Landscape proposals for this adjacent development site include for new hedgerows, scattered trees, shrub planting, amenity grassland, bulb planting and wildflower meadow.

7.5.72 This adjacent development is considered likely to result in cumulative impacts; however, given the size of the development in relation to the proposals for the Site, these effects are considered to be **non-significant**.

Application Nº. 2020/0040: Highways works comprising the linking of Capitol Close and Higham Lane via a new roundabout, road realignment and widening works throughout, enlargement of existing roundabout located at Capitol Close and Whinby Road and provision of associated footpaths

7.5.73 Located 250 m south-west of the Site, proposals allow for the creation of a new roundabout, linking Capitol Close to Higham Lane. Proposals will result in the loss of some broad-leaved plantation woodland, as well as smaller areas of introduced shrub, dense scrub, a building (no bat roosts) and defunct hedgerows.

7.5.74 Recommendations were made for replacement planting for any woodland and hedgerows lost to the works.

7.5.75 Given the scale of the proposed roundabout works and the recommendations for replacement planting, there are **not considered to be any cumulative effects**.

7.5.76 Located approx. 60 m south-west of the site, proposals allow for development of two industrial units, with associated infrastructure and landscaping. Proposals will result in the loss of arable farmland, semi-improved neutral grassland, dense scrub, scattered trees / scrub and tall ruderal habitat.

7.5.77 The total loss of arable land is anticipated, which could have a negative effect upon ground nesting birds such as grey partridge and skylark. However, none of these species we observed during surveys other farmland areas are present within 100 m. As such, potential effects are considered minor.

7.5.78 A species-rich hedgerow and some semi-improved grassland will be retained within the proposals, along with planting of native woodland, scattered trees and creation of attenuation ponds.

7.5.79 Though arable land will be lost both on Site and as a result of this adjacent development, losses on the adjacent development site are considered to be minor. As such, there are **not considered to be any cumulative effects**.

Application Nº. 2018/0965: Signalised gyratory roundabout with improvements to the existing Dodworth Road / Broadway / Pogmoor Road junction and re-configuration of park

7.5.80 Located approximately 350 m south-east of the Site, proposals allow for the creation of a gyratory roundabout, along with areas of 'green space'. The works will result in the loss of some amenity grassland, scattered trees and small areas of tall ruderal vegetation.

7.5.81 This development is linked to the Site by a train line, lined with natural habitats (e.g. scrub and tall ruderal) on the embankments. The proposed gyratory works will retain vegetation on the railway embankment, as well as green space surrounding the roundabout. As such, bat foraging habitat will be retained and commuting links to the Site will be maintained for bat, via the train line and creation of Strategic Green Space on the southern and eastern boundaries of the Site.

7.5.82 As such, there are **not considered to be any cumulative effects**.

7.6 Summary

Table 7.3: Assessment Summary and Residual Ecological Effects

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Significance	Proposed Mitigation / Enhancement	Rationale	Residual Significance of Effects
Construction Impacts							
Denby Grange Colliery SAC; South Pennine Moors SAC; Peak District Moors / South Pennine Moors Phase 1 SPA.	Pollution	Indirect Temporary	International	Not Significant	N/A	No significant effects anticipated	Not Significant Certain / Near Certain
Redbrook Pastures LWS	Damage (via recreation) Pollution / Dust	Direct Indirect Adverse Temporary	District	Significant	Avoid / minimise artificial light spill Produce EcoCEMP	Prevent loss of habitat for nocturnal species as a result of light spill. EcoCEMP to detail measures to prevent damage or pollution of LWS	Not Significant Certain / Near Certain
Hugset Woods LWS	Pollution	Indirect Temporary	District	Not Significant	Produce EcoCEMP	EcoCEMP to detail measures to prevent pollution of LWS	Not Significant - Near Certain
Daking Brook LWS; Silkstone Fall Wood LWS; Barnsley Canal	Pollution	Indirect Temporary	District	Not Significant	N/A	N/A	Not Significant - Near Certain

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Significance	Proposed Mitigation / Enhancement	Rationale	Residual Significance of Effects
at Wilthorpe LWS; Falthwaite and Lowe Wood LWS.							
Broad-leaved semi-natural woodland	Small Extent Habitat Loss Damage Pollution	Direct Indirect Adverse Temporary	Local	Significant Negative / Probable	New woodland planting Avoidance of artificial lighting of any retained habitat Producing EcoCEMP & HLMP	Replace lost trees, prevent lighting or damage to any retained trees and detail establishment techniques.	Not Significant - Near Certain
Broad-leaved Scattered Trees	Total or Partial Loss Damage	Direct Adverse Temporary	Local	Significant Negative / Certain / Near Certain	New tree planting Avoidance of artificial lighting of any retained habitat Producing EcoCEMP & HLMP	Replace lost trees, prevent lighting or damage to any retained trees and detail establishment techniques.	Significant during construction & into medium term - Near Certain
Hedgerows	Partial Loss Damage	Direct Adverse	Local	Significant Negative /	Hedgerow translocation	Reduce hedgerow loss, replace lost hedgerows, prevent damage or lighting of retained / translocated	Significant during construction & into medium

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Significance	Proposed Mitigation / Enhancement	Rationale	Residual Significance of Effects
		Temporary		Certain / Near Certain	New hedgerow planting Avoidance of artificial lighting of any retained habitat Producing EcoCEMP & HLMP	hedgerows and detail establishment techniques. Increase hedgerow planting throughout development and strategic green spaces	term - Near Certain
Running Water	Sedimentation Pollution Habitat Loss	Indirect Adverse Temporary	Local	Significant Negative / Probable	Producing EcoCEMP	Detail measures to prevent pollution	Significant during construction / probable
Bats	Killing / injury Habitat Loss Severance of Commuting Habitat	Direct Indirect Adverse Permanent / Temporary	Local	Legal Offense / Significant Negative / Probable	Update bat surveys and pre-felling / demolition checks Bat boxes installation Planting suitable habitat Sensitive lighting	Update surveys due to mobility of roosting bats (particularly in tree roosts) A range of habitats created throughout for foraging/commuting Bat boxes and habitat creation to mitigation for lost habitat	Significant during construction (uncertain) No legal Offense likely

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Significance	Proposed Mitigation / Enhancement	Rationale	Residual Significance of Effects
						Sensitive lighting to maintain dark corridors	
Birds	Killing / injury Disturbance of Nesting Birds Habitat Loss	Direct Adverse Temporary	Local	Legal Offense / Significant Negative / Probable	Vegetation / ground clearance avoiding nesting period or preceded by nest check. Nest box installation and habitat creation	To avoid destroying / damage active bird nests. To replace lost habitat	Significant during construction (uncertain) No legal Offense likely
Great Crested Newts	Killing / Injury Habitat Loss	Direct Indirect Adverse Temporary	Legal Protections only (Precautionary)	N/A	Precautionary measures outlined in an EcoCEMP for site clearance	To avoid accidental death / injury	No legal Offense likely
Reptiles	Killing / Injury	Direct Indirect Adverse Temporary	Legal Protections only (Precautionary)	N/A	Precautionary measures outlined in an EcoCEMP for site clearance	To avoid accidental death / injury	No legal Offense likely

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Significance	Proposed Mitigation / Enhancement	Rationale	Residual Significance of Effects
Badger	Killing / Injury	Direct Indirect Adverse Temporary	Legal Protections only (Precautionary)	N/A	Precautionary measures outlined in an EcoCEMP for site clearance Pre-commencement badger survey	To avoid accidental death / injury To confirm continued absence, due to high mobility of badgers	No legal Offense likely
Non-native Invasive Species	Spread of Non-native Invasive Species	Direct Indirect Adverse Temporary	Legal Protections	N/A	Pre-commencement survey, input from invasive species specialist and production of invasive species management plan	To prevent spread of non-native species	No legal Offense likely
Operational Impacts							
Denby Grange Colliery SAC; South Pennine Moors SAC; Peak District Moors / South Pennine Moors Phase 1 SPA	Pollution Recreational Pressures	Direct Indirect Adverse Permanent	International	Not Significant / Certain / Near Certain	N/A	N/A	Not Significant Certain / Near Certain

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Significance	Proposed Mitigation / Enhancement	Rationale	Residual Significance of Effects
Redbrook Pastures LWS	Pollution Recreational Pressures	Direct Adverse Permanent	District	Not Significant Probable	Installation of signage and litter / dog waste bins	Educate residents as to importance of LWS and personal responsibilities	Not Significant Near Certain
Hugset Woods LWS; Daking Brook LWS; Silkstone Fall Wood LWS; Barnsley Canal at Wilthorpe LWS; Falthwaite and Lowe Wood LWS.	Pollution Recreational Pressures	Indirect Adverse Permanent	District	Not Significant Probable	N/A	N/A	Not Significant Near Certain
Broad-leaved Semi-natural Woodland	Recreational Pressures	Direct Adverse Permanent	Local	Significant Probable	HLMP production and installation of litter / dog waste bins	Detail management techniques / schedule and reduce likelihood of littering	Significant / Probable / short term Not Significant / Near Certain – long term
Broad-leaved Scattered Trees	Recreational Pressures	Direct	Local	Not Significant (on any retained trees)	HLMP production	Detail management techniques / schedule	Not Significant / Near Certain - long term

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Significance	Proposed Mitigation / Enhancement	Rationale	Residual Significance of Effects
Hedgerows	Failure of translocated hedgerows	Indirect Adverse	Local	Significant Near Certain	HLMP production	Over 1.5 times the length of existing native hedgerows to be planted with planting and management techniques / schedule provided in HLMP.	Not Significant / probable - long term
Running Water	Pollution / littering	Direct Adverse Permanent	Local	Significant Probable	Appropriate future management of drainage ditch	Loss of open stream habitat will be offset by improvement in the retained running water habitat	Not Significant / Probable - long term
Bats	Loss of habitat (via artificial lighting); Sub-optimal management of habitats	Indirect Adverse	Local	Significant Probable	Bat box checks / maintenance Sensitive lighting Habitat Management Plan	Maintain usability of bat boxes and avoid / reduce impact of artificial lighting and maximise ecological/invertebrate supporting value of newly created habitats.	Not Significant Certain / Near Certain - long term
Birds	Continued absence of suitable habitat for ground nesting birds	Direct Adverse	Local	Not Significant Probable	Bird box checks / maintenance	Maintain usability of bird boxes and maximise ecological gains/supporting value from newly created habitats	Not Significant Certain / Near Certain

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Significance	Proposed Mitigation / Enhancement	Rationale	Residual Significance of Effects
Non-native Invasive Species	Spread of Non-native Invasive Species	Direct Adverse	Legal Protections	N/A	N/A – removed during construction	N/A	No Legal Offenses Likely
Badger, Reptiles, Amphibians (including GCN) and other species	N/A	N/A	Legal Protections	N/A	Habitat creation and connectivity	Measures to enhance the site for these species including habitat creation and measures to provide opportunities for safe species movement through the site	N/A

7.7 References

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