7 Ecology

7.1 Introduction

7.1.1 This Chapter of the ES reports the likely significant effects of the Proposed Development upon the ecology receptors within the site (Site) and surrounding area. This Chapter also described the methods used to assess these impacts, the existing baseline conditions, the proposed mitigation measures required to prevent, reduce or offset any significant negative impacts and the likely residual impacts after these methods have been adopted.

7.1.2 A previous application for the Site was submitted in 2021, for which an ES Chapter was prepared by Tetra Tech (previously known as WYG). This ES Chapter will assess the impacts of this updated application in comparison with the previous application.

7.1.3 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 in part subject to open-cast mining, later refilled. The centre of the Site has an approximate Ordnance Survey National Grid Reference of SE 31700 07250.

7.1.4 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.

7.1.5 Update 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 50m for potential effects on badgers *Meles meles*).

7.1.6 An update 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.

The updated proposed development comprises a mixed-use development to provide up to 1,560 new homes and up to 43 hectares of employment land for Use Class E/B2/B8. In addition, the proposals will provide:

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

7.1.7 The chapter has been prepared by Wardell Armstrong Ecologist Olivia Satur, and Wardell Armstrong Technical Director Tim Palmer.

7.2 Assessment Approach

Legislation, Planning Policy and Guidance

National Planning Policy Framework

7.2.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act imposes a legal duty on Planning Authorities to 'have regard' to the conservation of biodiversity when considering planning applications.

7.2.2 Section 41 of the NERC Act requires the Secretary of State to publish a list of species and habitats of principal importance for conserving biodiversity in the UK. Such Biodiversity Action Plan (BAP) Habitats and Species (2007) do not receive specific protection but their inclusion highlights their importance at a national level. This list is used by Local Planning Authorities to identify the species and habitats that should be afforded priority when applying the requirements of the National Planning Policy Framework (NPPF).

7.2.3 The UK Biodiversity Action Plan was superseded by The Biodiversity Framework (JNCC, 2012) and Biodiversity 2020 (Defra, 2011) with regards to biodiversity policies for the UK. These policies aim to deliver a more strategic, landscape-scale approach to nature conservation, wildlife, people, places, and climate change resilience. The UK Government's 25 Year Environment Plan for England (Defra, 2018) is the policy framework that will replace Biodiversity 2020.

7.2.4 The NPPF underpins the Government's planning policies for England and how these are to be applied. The central theme of the NPPF is a presumption in favour of sustainable development.

7.2.5 Paragraph 174 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.

7.2.6 The NPPF goes on to state that(Paragraph 180) 'When determining planning applications, local planning authorities should apply the following principles':

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

- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the Site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

- development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and

- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

Local Plan Context

7.2.7 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:

7.2.8 Policy BIO1 - Biodiversity and Geodiversity

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

1. 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.

2. Maximising biodiversity and geodiversity opportunities in and around new developments.

3. 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.

4. 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.

5. Protecting ancient and veteran trees where identified.

6. 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).

7.2.9 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:

7.2.10 "The site is proposed for mixed use predominantly for housing and employment. The indicative number of dwellings proposed on this site is 1,560. 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:

1. Provide a primary school on the Site;

2. Ensure that ground stability and contamination investigations are undertaken prior to development commencing and necessary remedial works completed in accordance with the phasing plan;

3. Provide on and off site highway infrastructure works, including a link road (Claycliffe Link) and improvements at Junction 37 as necessary;

4. Provide small scale convenience retail and community facilities in compliance with Local Plan policy TC5 Small Local Shops;

5. Retain, buffer and manage the watercourse, grassland and woodland north-east of Hermit Lane;

6. 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;

7. Create/retain wildlife corridors through/across the Site;

8. Provide accessible public open space;

9. Ensure that any sustainable drainage system incorporating above-ground habitats is designed from the outset to serve the whole site;

10. Give consideration to the drain/culvert that runs through the Site;

11. 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

12. Protect the routes of the Public Rights of Way that cross the Site, and make provision for these as part of any proposal.

International Legislation

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

- The Conservation of Habitats and Species Regulations 2019 transpose the EU Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) and Directive 2009/147/EC on the Conservation of Wild Birds into UK law. These Regulations provide for the notification and protection of statutory designations of European value ('European sites'), and the protection of a number of rare and vulnerable species in a European context ('European Protected Species' - EPS).

- 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 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

7.2.12 Wildlife and Countryside Act (WCA) 1981 (as amended), which protects Sites of Special Scientific Interest, National Nature Reserves, and a range of species including bats, great crested newt, otter, water vole and all wild birds. This includes partial protection for adder, slow worm, common lizard and grass snake. Additional protection is provided to birds listed on Schedule 1 of WCA against disturbance of any Schedule listed bird or young while nesting. Finally, Section 14 of the WCA prohibits the release of any Schedule 9 (part 2) species.

7.2.13 The Protection of Badgers Act 1992, which protects active badger setts and the animals themselves from disturbance.

7.2.14 Hedgerow Regulations 1997, which allows identification of hedgerows classified as 'important' against the Wildlife and Landscape Criteria (the 'criteria')

7.2.15 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.

7.2.16 The Natural Environment and Rural Communities Act 2006 (the NERC Act), which requires the Secretary of State to publish a list of habitats and species of principal importance for the conservation of biodiversity in England.

7.2.17 Elements of the NERC 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.

7.2.18 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).

7.2.19 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

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

Great Crested Newts

7.2.21 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

7.2.22 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

7.2.23 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

7.2.24 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

7.2.25 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

7.2.26 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

7.2.27 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

7.2.28 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

7.2.29 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

7.2.30 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'.

7.2.31 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.

7.2.32 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).

7.2.33 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.

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

7.2.35 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

7.2.36 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.

7.2.37 When a receptor falls into more than one category, it is considered to be within the higher level. Some receptors can be readily assigned to one of the above categories, particularly sites that support designations. For example, a site with a designation assigned through European legislation, such as a Special Area of Conservation (SAC) would normally be considered of International Value; a Site of Special Scientific Interest (SSSI) designated by UK statute would be of National Importance; and a site designated by a Local Authority would be of County Importance.

7.2.38 Receptors which are considered to be of value at local level or higher for which significant impacts can be reasonably anticipated are identified as valued ecological receptors and are discussed throughout the report. Receptors which are not exposed to negative (or positive) effects are excluded from the assessment.

7.2.39 Likely impacts on the receptors occurring within the Site have been identified through consideration of the proposals. The impacts were characterised with reference to the following:

- whether an impact is considered to be positive or negative;
- the extent/magnitude of the impact;
- duration of the impact, its timing and frequency; and
- whether any of the impacts are cumulative in effect.

7.2.40 Both positive and negative impacts/effects will be determined according to whether the change is in accordance with nature conservation initiatives and policy. The definitions provided within CIEEM guidance (2018) are detailed within Table 1, below. Confidence in the assessment, based on the availability of supporting evidence is expressed as being either High, Moderate or Low.

Table 1: Definition of positive and negative effects

Positive	A change that improves the quality of the environment e.g. by increasing species diversity extending habitat or improving water quality. Positive impacts may also include halting or slowing an existing decline in the quality of the environment.
Negative	A change which reduces the quality of the environment e.g. destruction of habitat, removal of species foraging habitat, habitat fragmentation, pollution

7.2.41 Following impact characterisation, assessments are made based on professional judgement, as to whether there would be any corresponding loss of integrity (of a site or ecosystem) or whether the conservation status (of a habitat or species) is likely to be affected, i.e. whether the magnitude of impact(s) would be 'significant' in ecological terms.

7.2.42 As indicated in the CIEEM guidance, the impact may influence the conservation status and integrity of receptors, and effects may be judged to be significant in ecological terms even at the site level.

7.2.43 Regarding cumulative assessment, two types of cumulative effects will be assessed:

- Type 1 Effects: The combination of individual effects (for example noise, dust and visual effects) from a development on a particular receptor; and

- Type 2 Effects: Effects from several committed developments, which individually might be insignificant, but when considered together could create a significant cumulative effect.

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.

7.2.45 Further consultations are detailed in Table 1 below:

Table 7.2: Consultee comments.

Consultee	Date	Residential Hybrid Application	Employment Hybrid Application
Biodiversity Officer	12/10/2021 14/12/2021	Querying absence of BNG BMBC suggest £25k / BNG unit, preference to deliver on site	Querying absence of BNG BMBC suggest £25k / BNG unit, preference to deliver on site
Yorkshire Wildlife Trust	18/11/2021	Concern over lack of BNG info. Concern over impact to Wilthorpe Marsh and Canal LWS/YWT site. This should be part of assessment. BEMP insufficient to determine application.	Concern over lack of BNG info. Concern over impact to Wilthorpe Marsh and Canal LWS/YWT site. This should be part of assessment. BEMP insufficient to determine application.
Forestry Officer/Tree Officer	19/01/2022	Better consideration to retaining trees/hedges. Design needs to be led by arboricultural constraints and consideration given to earthworks and layout to retain features. Clearing trees and hedges will	Better consideration to retaining trees/hedges. Design needs to be led by arboricultural constraints and consideration given to earthworks and

		impact ecology and visuals. Tree report needs to be considered.	layout to retain features. Clearing trees and hedges will impact ecology and visuals. Tree report needs to be considered.
Wildscapes	14.12.2021	Request BNG metric assessment and demonstration of 10% net gain. Baseline habitats confirmed as appropriately assessed and concur with the Hedgerow Regulations. Outline Biodiversity and ecological management plan needs to be completed for wider scheme and detailed for Phase 1. Request confirmation of extent of woodland and stream retention, and loss and in particular in relation to Hermit Lane, extent of new planting and hedgerows to be clarified. Also seeks clarification on implications for Ancient Woodland. Clarification sought on semi-improved grassland. Effect on wildlife corridors to be confirmed. Proposals in respect of Bird and Bat boxes to be clarified Sites suitability for wintering birds should be explicitly assessed. Concur that great-crested newt, reptiles and badger are 'likely absent' from the Site.	Request BNG metric assessment and demonstration of 10% net gain. Baseline habitats confirmed as appropriately assessed and concur with the Hedgerow Regulations. Outline Biodiversity and ecological management plan needs to be completed. Request confirmation of extent of woodland and stream retention and loss and extent of new planting and hedgerows to be clarified. Effect on wildlife corridors to be confirmed. Proposals in respect of Bird and Bat boxes to be clarified

Limitations to the Assessment

7.2.46 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 7.9).

7.3 Baseline Conditions

7.3.1 The Site has been subject to desk-based and field surveys between November 2013 and September 2023. The updated baseline conditions are fully described in Technical Appendices 7.1-7.8:

- Appendix 7.1 – Barnsley West Preliminary Ecological Appraisal Report (WA, 2023);
- Appendix 7.2 - Barnsley West GCN eDNA Technical Note (WA, 2023);
- Appendix 7.3 – Barnsley West Bat Survey Update Report (WA, 2023);
- Appendix 7.4 – Barnsley West Breeding Bird Survey Report (WA, 2023);
- Appendix 7.5 – Barnsley West Wintering Bird Survey Report (WA, 2023);
- Appendix 7.6 – Barnsley West Otter and Water Vole Survey Report (WA, 2023);
- Appendix 7.7 – Barnsley West Invertebrate Appraisal (WA, 2023);
- Appendix 7.8 – Barnsley West Ancient Woodland Assessment (WA, 2023); and
- Appendix 7.9 – Barnsley West Biodiversity and Ecological Management Plan (WA, 2023);

7.3.2 An updated desk study was also carried out in 2023. Records were obtained from Barnsley Biological Record Centre (BBRC), and other available internet-based resources for non-statutory sites and protected / notable species records within a 2 km and statutory sites within 5km of the Site.

7.3.3 OS and satellite mapping was also used to gain contextual habitat information, including to identify waterbodies within 500 m of the Site (in relation to the potential presence of GCN).

7.3.4 A summary of the baseline for each receptor including desk study results and the likely impacts thereon are described below.

Conservation Sites

7.3.5 Statutory and non-statutory conservation sites returned from the desk study are evaluated in Table 7.3, below.

7.3.6 A total of 9 Sites were identified, including two Special Areas of Conservation (SAC), one Special Protection Area (SPA), five Local Wildlife Sites and one area of Ancient Woodland.

Table 7.3: Non-statutory Designated Sites and level of Importance.

Site Name and Status [1]	Distance and Direction	Reason for Designation/identification	Level of Importance
Redbrook Pastures LWS	30m to west	This LWS comprises two fields with hedgerows (some with mature trees) and areas of scattered scrub, both dominated by a neutral sward; although, the southern-most field contains elements of acidic grassland. English bluebell *Hyacinthoides non-scripta* and wood *millet Millium effusum*, both South Yorkshire indicators of ancient woodland, are present.	County
Hugset Wood LWS/Ancient woodland	0.74km west	Predominantly comprised of coniferous plantation with linear areas of broadleaved semi-natural woodland. Replanted ancient woodland and ancient and semi-natural woodlands form the main classifications of the site. Thirteen ancient woodland indicators species (flora) are cited. Other notable species include willow tit *Poecile montanus*, dunnock *Prunella modularis*, song thrush *Turdus philomelos* and white-letter hairstreak *Satyrium walbum*.	National
Daking Brook LWS	0.96km northwest	An often tree-lined brook, which is largely unmodified and unpolluted. It flows west-east, passing through arable and pastoral farmland. Notable species cited include white-clawed crayfish *Austropotamobius pallipes*, brown trout *Salmo trutta* and bullhead *Cottus gobio*. South Yorkshire ancient woodland indicator species Dog's mercury *Mercurialis perennis,* remote sedge *Carex remota*, English bluebell, wood sorrel *Oxalis acetosella*, greater stitchwort *Stellaria holostea* and opposite leaved golden saxifrage *Chrysosplenium oppositifolium* have been present. Signal crayfish *Pacifastacus leniusculus* and Indian balsam have also been recorded.	County
Barnsley Canal at Wilthorpe LWS	1.09km northeast	This LWS comprises a stretch of the disused Barnsley Canal and adjacent pastoral 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. Ancient woodland indicator species remote sedge, English bluebell, wood speedwell *Veronica montana* and sessile oak *Quercus petraea* are cited. Other notable species include reed bunting *Emberiza schoeniclus*, grasshopper warbler *Locustella naevia*, dunnock, bullfinch *Pyrrhula pyrrhula* and song thrush. Standing water offers potential habitat for GCN and common toad *Bufo bufo* are considered likely present.	County

[1] SPA – Specially Protected Area, SAC – Special Area for Conservation, Ramsar – site designated under the Ramsar Convention, SSSI – Site of Special Scientific Interest, NNR – National Nature Reserve, LNR – Local Nature Reserve.

Site Name and Status [1]	Distance and Direction	Reason for Designation/identification	Level of Importance
Silkstone Fall Wood LWS	1.7km southwest	A mixture of semi-natural broad-leaved, mixed plantation and coniferous plantation woodland, with small watercourse and a small pond. South Yorkshire ancient woodland indicator species of remote sedge, English bluebell, wood millet *Milium effusum,* dog's mercury, sessile oak, greater stitchwort, wood speedwell, wood melick *Melica uniflora*, wood sorrel, yellow archangel *Lamiastrum galeobdolon* and yellow pimpernel *Lysimachia nemorum* are all present on this site. Other notable species include willow tit, dunnock, bullfinch, song thrush and brown hare *Lepus europaeus*. Lesserspotted woodpecker *Dendrocopos minor* has previously been recorded.	County
Denby Grange Colliery Ponds SAC	8.2km north-west	Waterbody created by coal-mining activity, which has consistently yielded high counts of great crested newt in recent years.	International
South Pennine Moors SAC	11.5km southwest	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.	International
Peak District Moors (South Pennine Moors Phase 1) SPA	11.5km southwest	Notable breeding populations (i.e. regularly used by 1% or more of the Great Britain population) of the following Annex 1 species; golden plover *Pluvialis apricaria*, merlin *Falco columbarius* and short-eared owl *Asio flammeus*	International

Habitats

7.3.7 A Preliminary Ecological Appraisal (PEA) survey was undertaken in 2017 (AECOM, see and updated in by WYG in 2020. These surveys were carried out using Phase I Habitat Survey methodology, with reference to Guidance for Preliminary Ecological Appraisal (CIEEM, 2017) and Handbook for Phase I Habitat Survey (JNCC 2010).

7.3.8 A further update PEA was carried out on Site in by Wardell Armstrong (2023; Appendix 7.1). This survey used UK Habitat (UKHab) Classification Survey methodology as set out in the user manual (Panks *et al.,* 2022). The habitats recorded are described below using UKHab criteria and presented in Appendix 7.1.

7.3.9 In summary, the following 'UK Habitat Classification' habitat types were recorded on or directly adjacent to the Site:

- Broad-leaved Semi-natural Woodland
- Ancient Woodland
- Dense Scrub
- Scattered Scrub
- Broad-leaved Scattered Trees
- Hedgerows
- Semi-improved Neutral Grassland
- Improved Grassland
- Modified Grassland
- Amenity Grassland
- Tall Ruderal
- Standing Water
- Running Water
- Dry Ditch
- Arable
- Bare Ground
- Hardstanding[2]
- Buildings
- Fences
- Wall

7.3.10 The habitats recorded on Site in 2023 were predominately the same as those previously recorded in 2017 and 2020. One of the main differences is that there are new areas of standing water, one of which (Pond 8) was previously recorded as marshy grassland. Additionally, the majority of the grazed pasture was previously recorded as improved grassland, this is reclassified according to UKHab criteria as modified grassland in 2023.

Broadleaved semi-natural woodland

7.3.11 The woodland area located to the east of the Site, south of Hermit Lane is dominated by pedunculate oak *Quercus robur*, with frequent sycamore *Acer pseudoplatinus* and occasional ash *Fraxinus excelsior*.

7.3.12 Two further areas of woodland are located north of Hermit Lane; one in the centre of the Site; the second running north-east, from the Site`s centre, towards Redbrook Farm. The smaller area of woodland at is dominated by alder, with frequent pedunculate oak. The remaining woodland area, running north-east towards Redbrook Farm, covered a larger area and is dominated by pedunculate oak, with a number of frequent occurring species such as silver birch *Betula pendula,* ash and alder *Alnus glutinosa*.

7.3.13 Woodland present on Site which lies outside of the ancient woodland area (described below) is considered to be of **Local** importance.

7.3.14 An Ancient Woodland Assessment was carried out on Site in 2023. The assessment used cartographic evidence that shows the Site as consistently being within a

[2] 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).

landscape of woodland (1577-1677), and which shows Craven Wood as being continuously wooded (1821-1849).

7.3.15 The botanical survey identified 15 species of known ancient woodland indicator species including sessile oak, bluebell *Hyacinthoides non-scripta*, dog's mercury *Mercurialis perennis*, greater stitchwort *Stellaria holostea*, and pendulous sedge *Carex pendula*.

7.3.16 Although not listed on the Ancient Woodland Inventory, the assessment concluded that Craven Wood is of ancient origin. The majority of broadleaved woodland to the east of the Site and the woodland adjacent to the Site boundary to the east is therefore Ancient Woodland.

7.3.17 Previous surveys did not identify Craven wood as being Ancient, therefore this habitat was not included within the baseline in the previous ES.

7.3.18 Considering the biodiversity value of the woodland, Ancient Woodland present on Site is considered to be of **County** importance. Although, it should be noted that Ancient Woodland is protected by national planning policy (NPPF).

Dense and Scattered Scrub

7.3.19 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 to the north. A mixture of Hawthorn *Crataegus monogyna*, rose *Rosa sp*. and bramble *Rubus fruticosus* were present.

7.3.20 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 was dominated by mature hawthorn, with semi-mature ash and elder. The smaller area was dominated by gorse, with abundant elder.

7.3.21 Pockets of bramble scrub were located adjacent to the woodland section north of Hermit Lane.

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

7.3.23 Dense and scattered scrub on Site is considered to be of **Site** importance.

Broad-leaved Scattered Trees

7.3.24 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.

7.3.25 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.

7.3.26 Scattered trees on Site are considered to be of **Local** importance.

Hedgerows

7.3.27 Mature hedgerows, predominantly hawthorn dominant, are present throughout the site providing peripheral and internal field boundaries.

7.3.28 Approximately 40 hedgerows were identified on Site, nine of which (H3, H4a, H9, H13, H15a H17a, H17b, H28, H35) were considered 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).

7.3.29 Detailed hedgerow surveys were undertaken in 2020/21 to identify any 'Important' hedgerows, with reference to the Hedgerow Regulations 1997. Five hedgerows were considered to be 'Important' under the 'Wildlife and Landscape' criteria.

7.3.30 'Hedgerows' are afforded a HAP under the LBAP, and listed under Sch.41. Whilst the majority are species poor and/or defunct, considered collectively this habitat resource is considered to be of **District** importance.

Semi-improved Neutral Grassland

7.3.31 Semi-improved neutral grassland was isolated to an area to the east of the Site, north of Hermit Lane. This grassland has historically been assessed as unimproved neutral grassland in 2013, however, had been assessed more recently as semi-improved neutral grassland in 2017 and 2023.

7.3.32 The grassland to the east of the site support species including perennial rye-grass *Lolium perenne*, Yorkshire fog *Holcus lanatus*, and creeping *bent Agrostis stolonifera*. The grass becomes more diverse on the sloping embankment towards the woodland, including species such as red fescue *Festuca rubra,* timothy *Phleum pratense* and common ragwort *Jacobaea vulgaris*.

7.3.33 Neutral grassland is an LBAP habitat and is considered to be of **District** importance.

Modified Grassland

7.3.34 Modified grassland, previously categorised as improved grassland in 2017 and 2020, is the major habitat on Site. All fields excluding those supporting cereal crops and semi-improved neutral grassland now support modified grassland, which is cut for silage crops for horses, ponies and sheep. All were typically dominated by perennial rye-grass, with abundant annual meadow-grass *Poa annua* 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.

7.3.35 Modified grassland on Site is considered to be of **Site** importance.

Amenity Grassland

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

7.3.37 Amenity grassland on Site is considered to be of **Negligible** importance.

Tall Ruderal

7.3.38 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 Rumex obtusifolius* and common nettle *Urtica dioica*, with areas of bare ground also present. 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 *Cirsium vulgare* and broad-leaved dock.

7.3.39 Tall ruderal on Site is considered to be of **Negligible** importance.

Standing Water

7.3.40 Three waterbodies are located on Site.

7.3.41 Pond 1, located within the woodland north of Hermit Lane, is a pooled area of standing water located along a stream which runs south-north through the wood. At the time of the survey, water levels were very low and restricted to the centre of the water body. The pond contains dense bullrush *Typha gracilis* and willowherb *epilobium* sp., and is surrounded by dense nettles and bramble scrub. Pond 1 is considered to be of **District** importance.

7.3.42 Pond 7 is located to the south-west of Hermit Lane in the location of a former stock pile. This waterbody was presumably dry before the 2023 surveys and comprises an area of flooded land within a sheep-grazed fields. Water turbidity is high and there is no emergent/aquatic vegetation. Pond 8 is considered to be of **Local** importance.

7.3.43 Pond 8 was previously mapped as a marshy grassland in 2017 and 2020. It is located to the north of a hawthorn hedgerow with a horse-grazed field. Water levels were very low at the time of survey with moderate turbidity. Dense vegetation was present, including bullrush, willowherb sp. and meadow foxtail *Alopecurus pratensis*. Pond 8 is considered to be of **Local** importance.

7.3.44 'Ponds' are afforded a HAP under the LBAP; Standing water on Site is considered to be of **Local – District** importance.

<u>Running Water</u>

7.3.45 Two streams are present on Site, located within Craven Wood to the north of Hermit Lane, and Hermit Wood to the south of Hermit Lane. The streams run west-east and south-north respectively, before merging into a single watercourse at a confluence outside of the development boundary.

7.3.46 Both streams are slow-flowing and do not support any significant aquatic vegetation. Pond 4 is located along the stream to the north within Craven Wood, and is largely exposed to sunlight. The remainder of the watercourse and that within Hermit Wood are shaded by deciduous trees. The banks are therefore subject to near-permanent shading which restricts the ground flora present to shade-tolerant species including ivy, wild garlic, bluebells and scattered understory shrubs.

7.3.47 Some lengths of the streams are in good condition, however livestock intrusion and recreational pressures associated with the footpath that dissects Craven Wood have lead to trampling and erosion. 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.

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

Dry Ditch

7.3.49 In total, seven 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. It is unlikely that the ditches will hold water for more than 4 months during a year, therefore they have been classified as dry.

7.3.50 Dry ditches on Site are considered to be of **Negligible** importance.

Arable

7.3.51 The previous assessment reported eight arable fields on Site, however all arable fields to the north of Hermit Lane have now been converted to modified grassland. Five arable fields are present to the south and south-east of the Site and supported cereal crops.

7.3.52 Arable land on Site is considered to be of **Negligible** importance.

Bare Ground

7.3.53 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.

7.3.54 Bare ground on Site is considered to be of **Negligible** importance.

Hardstanding

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

7.3.56 Hardstanding on Site is considered to be of **Negligible** importance.

Buildings

7.3.57 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.

7.3.58 Buildings on Site are considered to be of **Negligible** importance.

Fences

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

7.3.60 Fences on Site are considered to be of **Negligible** importance.

Wall

7.3.61 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.

7.3.62 Walls on Site are considered to be of **Negligible** importance.

Protected / Notable Species

Amphibians (including GCN)

7.3.63 Barnsley Biological Record Centre (BBRC) returned 88 records of GCN with 2 km of the Site, from the last 10 years. A search of MAGIC identified no granted EPSMLs for GCN within 500m of the Site.

7.3.64 Three waterbodies suitable for GCN are present on Site (Pond 1, Pond 7 and Pond 8), with a further five ponds (Pond 2-Pond 6) present within the 500m of the Site boundary. Habitat Suitability Index (HSI) and environmental DNA (eDNA) surveys were carried out by WYG (2018 and 2020) and WA (2023). Access for survey was not possible for the majority of off-site ponds, due to their location within residential properties. Additionally, Ponds 7 and 8 were presumably dry in 2018 and 2020, as neither were subject to survey in these years.

7.3.65 Pond 1 is located on the northern half of the Site, within Craven Wood. At the time of the survey in 2023, water levels were very low and restricted to the centre of the waterbody. Pond 1 is functionally linked to a stream that also links to Pond 2 and Pond 3. The most recent HSI survey (WA, 2023) gave the pond a score of 0.48 (Poor). Pond 1 was subject to eDNA surveys in 2018 (WYG), 2020 (WYG) and 2023 (WA). All surveys returned negative GCN results.

7.3.66 Pond 2 and Pond 3 appear to be pooling features, associated with the confluence of Redbrook (similar to Pond 1). Due to access, neither pond were subject to HSI or eDNA surveys. It is thought possible that both ponds may support fish, and in view of the negative eDNA test in 2020 for Pond 1, they are considered unlikely to support GCN.

7.3.67 Pond 4, 5 and Pond 6 are located in residential gardens 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 in 2020, GCN are considered unlikely to be present in Ponds 4, 5 and 6.

7.3.68 Pond 7 is adjacent to the south western boundary of the Site. This pond sits within a sheep-grazed field and is approximately 30x20cm. The pond was given a HSI of 0.38 (Poor) and the eDNA were negative (WA, 2023).

7.3.69 Pond 8 is located directly to the north of a hawthorn hedgerow with a horse-grazed field. Water levels were very low at the time of survey. The pond was given a HSI score of 0.48 (Poor) and the eDNA results for were negative (WA, 2023).

7.3.70 Surveys indicate the absence of GCN from the three waterbodies onsite; 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. Suitable habitat for common toad *Bufo bufo* is present around ponds, wet ditches and woodland.

Reptiles

7.3.71 BBRC did not return any reptile records from within 2 km of the Site, from the last 10 years. The previous Ecological Appraisal (WYG, 2020) concluded that reptile species are likely absent from the Site.

7.3.72 The M1 corridor does provide a suitable connecting corridor for offsite reptile populations, however habitats on Site are considered sub-optimal for common reptile species as the majority of the Site comprises large arable and pastoral fields with limited structural variability.

7.3.73 Hibernacula opportunities and habitats such as semi-improved grassland, scrub, tall ruderal 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.

7.3.74 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.

7.3.75 The PEA survey carried out by WA (2023) confirms the above, and no sightings of reptiles were made on Site or during any of the previous Site surveys.

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

White-clawed Crayfish

7.3.77 There is no suitable habitat for white-clawed crayfish on Site. As such they are scoped out of further assessment.

Bats

7.3.78 BBRC returned 38 records of bats species within 2 km of the Site the last 10 years. The majority of records comprised field records of pipistrelle *Pipistrellus* sp. A total of 43 records were returned of bat species within 2 km of Site; 11 of which were dated within the last 10 years. The majority of records were field records, though 4 records were returned for roosting bats. Other species listed within the records included unidentified bat species, Leisler's bat *Nyctalus leisleri*, noctule *Nyctalus noctule,* brown long-eared *Plecotus auratus and myotis spp.*

7.3.79 Previous surveys (WYG, 2018, 2020) identified 44 trees and two buildings (B3 and B4) with bat roost potential. 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.

7.3.80 During the most recent surveys carried out in 2023, 35 individual trees, 3 tree groups and 4 buildings with bat roost potential were identified (B3, B4, B7 and B8). B7 and B8 were previously assessed as having Negligible potential to support roosting bats in 2018 and 2020.

7.3.81 In 2023, dusk emergence / dawn re-entry surveys were carried out on two trees and four buildings. The surveys identified bat roosts in B3/B4 (which are linked and

therefore effectively one building) and B8. No bat roosts were identified in either tree. Three further trees will be subject to a climbed inspection survey, the results to be provided in a separate Technical Note.

7.3.82 At least two common pipistrelle and two brown long-eared bats were observed emerging from B3/B4, and one common pipistrelle was recorded emerging from the western apex of B8.

7.3.83 A static detector was also deployed within B3/B4 for four weeks. This recorded high levels of bat activity from common pipistrelle (119.43 passes per night) and likely emergences.

7.3.84 In 2018, 2020 and 2023, 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).

7.3.85 Activity surveys, including deployment of automated bat detector units and manual transect surveys, were completed in 2018, 2020 and 2023. Bat activity was very similar across the three years.

7.3.86 The surveys 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 and 2023, very low Nathusius' pipistrelle was also recorded. In 2023, excluding common pipistrelle and soprano pipistrelle, all other species records accounted for <1% of overall activity.

7.3.87 The Site valuation 'score' remains the same as previously categorised following the 2023 activity surveys. Bats on Site are considered to be of **Local** importance.

Breeding Birds

7.3.88 The British Trust for Ornithology (BTO) returned records for 95 bird species within 2 km of the Site, within the last 5 years. There is suitable breeding habitat for many of these species on or adjacent to Site.

7.3.89 Breeding bird surveys were undertaken across the Site in 2018 and 2020 and 2023.

7.3.90 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.

7.3.91 In comparison, in 2020 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.

7.3.92 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.

7.3.93 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.

7.3.94 In 2023, the breeding bird survey recorded 46 species within the Site, of which none were confirmed breeding, 29 were probably breeders and a further 8 were possible breeders. The species recorded comprised of 11 BoCC Red listed species, 11 BoCC Amber listed species and 21 BoCC Green listed species. Ten SPI species and 11 LBAP species were also identified. No Annex 1 or Schedule 1 protected species were recorded.

7.3.95 Skylark and lapwing were recorded as probable breeders in 2023, with a peak count of 16 and 10 individuals respectively (in comparison to 9 and 24 in 2020). Grey partridge were also recorded, however only two individuals were recorded on the first survey.

7.3.96 The update breeding bird surveys confirmed the Site is still considered to be of **Local** importance.

Wintering Birds

7.3.97 Wintering Bird Surveys (WBS) were carried out between October 2022 and March 2023. No previous WBS have been carried out. Additional surveys are also scheduled for October and November 2023, which will be reported separately via a Technical Note.

7.3.98 The records provided by BBRC includes 29 species of which are birds of conservation concern (red and amber listed species) and those protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), Annex 1 threatened bird species of the Birds Directive (2009) and several UK Priority Species.

7.3.99 During transect survey visits 42 species were recorded within the survey area. The species recorded comprised of 2 Schedule 1 Protected Species, 10 BoCC Red listed species, 12 BoCC Amber listed species and 18 BoCC Green listed species. Nine SPI species and 12 LBAP species were also identified.

7.3.100 During the visits, small numbers of lapwing *Vanellus vanellus* were recorded using the fields on the southern half of the Site, and one individual golden plover *Pluvialis apricaria* was recorded on the northern half of the Site. Moderate numbers of skylark *Alauda arvensis* were also recorded across the Site.

7.3.101 No wintering populations recorded within the survey area comprised 1% or higher of the national breeding population.

7.3.102 The bird assemblage on Site is considered to be of **Local** importance.

Otter and Water Vole

7.3.103 BBRC returned one record of European otter *Lutra lutra* in 2019 at Silkstone Beck, which is within 2km of the Site. No water vole *Arvicola amphibius* records were returned.

7.3.104 In 2018 and 2020, both streams on Site were considered to be poor, but suitable for otters and water voles. Also, the dry ditches onsite were considered

highly unlikely to support water voles due to lack of water/vegetation. No evidence of any burrows or potential otter holts / resting features or spraints were observed during the PEA surveys. No targeted otter or water vole surveys were carried out in either year.

7.3.105 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.

7.3.106 In 2023, an otter and water vole survey was carried out on all watercourses on Site. No water vole field signs to include burrows, latrines, droppings, feeding stations or pathways were recorded.

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

7.3.108 However, given the large territories (up to 40km) of otter, it is considered that the streams on Site could be used by commuting otters within the locality. Otter are therefore considered further in this assessment, for the purpose **Legal protections.**

Invertebrates

7.3.109 The previous Ecological Appraisal (WYG, 2020) considered the Site likely to support populations of common invertebrates but unlikely to support any notable species or populations. An invertebrate scoping survey has been undertaken by WA (Appendix 7.7) No previous invertebrate surveys were carried out.

7.3.110 Over 2,100 records of invertebrates were identified within 2km of the search area. The records comprise mostly common species of butterflies and moths. Most of these are for gardens and locations off or on Higham Common Road and some of these appear to be derived from moth trapping. Species include white letter hairstreak *Satyrium w-album*, small heath *Coenonympha pamphilus*, dingy skipper *Erynnis tages* and cinnabar *Tyria jacobaeae.*

7.3.111 The 2023 invertebrate survey found habitats on Site that have the potential to support invertebrates, including broad-leaved woodland, unimproved neutral grassland to the west of Craven Wood, hedgerows and the pond on the south of Hermit Lane.

7.3.112 A total of 18 species of invertebrates were recorded during an invertebrate survey in, however this low number of species provides barely an impression of the fauna likely to be present on Site. The species identified species inclduing cynipid gall wasp *Andricus curvator,* red-tailed bumblebee *Bombus lapidaries,* 7-spot ladybird *Coccinella septempunctata* and large skipper *Ochlodes sylvanus.*

7.3.113 Based on the information above, the Site is considered to be of **Local** importance for invertebrate assemblages.

Badger

7.3.114 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.

7.3.115 The majority of the site comprised large open areas of grassland and hedgerows, 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.

7.3.116 Surveys undertaken in 2018, 2019, 2020 and 2023 identified no evidence of badger and / or setts. In addition, no sightings of badger were made during any other survey visits to the site.

7.3.117 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

7.3.118 BBRC returned 18 recent records of West European hedgehog within 5 km of the Site. The most recent record (dated 2020) was located 3.9 km south-east of the Site.

7.3.119 Foraging opportunities for hedgehog existed on Site in the form of semi-improved grassland, scrub and hedgerows. 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.

7.3.120 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.

7.3.121 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.

7.3.122 Hedgehog populations on the Site are therefore considered to be of **Site** importance. Proposing precautionary measures for mammals in general, is considered reasonable avoidance measures for this species.

Invasive Plant Species

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

7.3.124 Japanese knotweed was recorded in the west of the Site in 2020, though it appeared to have been subject to treatment works.

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

7.3.126 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**.

7.3.127 The ecological receptors and their sensitivity are as follows:

- Statutory Designated Sites – SAC & SPA - **International** Importance;

- Non-statutory Designated Sites – **County** Importance;
- Broad-leaved Semi-natural Woodland – **Local** Importance;
- Ancient Woodland – **County** Importance;
- Dense and Scattered Scrub – **Site** Importance;
- Broad-leaved Scattered Trees – **Local** Importance;
- Hedgerows – **District** Importance;
- Neutral Grassland –**District** Importance;
- Modified Grassland – **Site** Importance;
- Standing Water – **Local - District** Importance;
- Running Water – **Local** Importance;
- Bats – **Local** Importance;
- Breeding Birds – **Local** Importance;
- Wintering Birds – **Local** Importance;
- Invertebrates – **Local** Importance;
- Hedgehog – **Site** Importance and
- Amphibians (including GCN); Reptiles; Badger; and, Invasive Species – considered for the purpose of **Legal** protections.

7.4 Assessment of Likely Significant Effects

7.4.1 An assessment of likely significant effects of the Proposed Development on the ecological features identified above has been undertaken based on the proposal to provide up to 1,560 new homes and employment area, including a new primary school, link road, shops, facilities and greenspace.

Mitigation Inherent with the Submitted Design

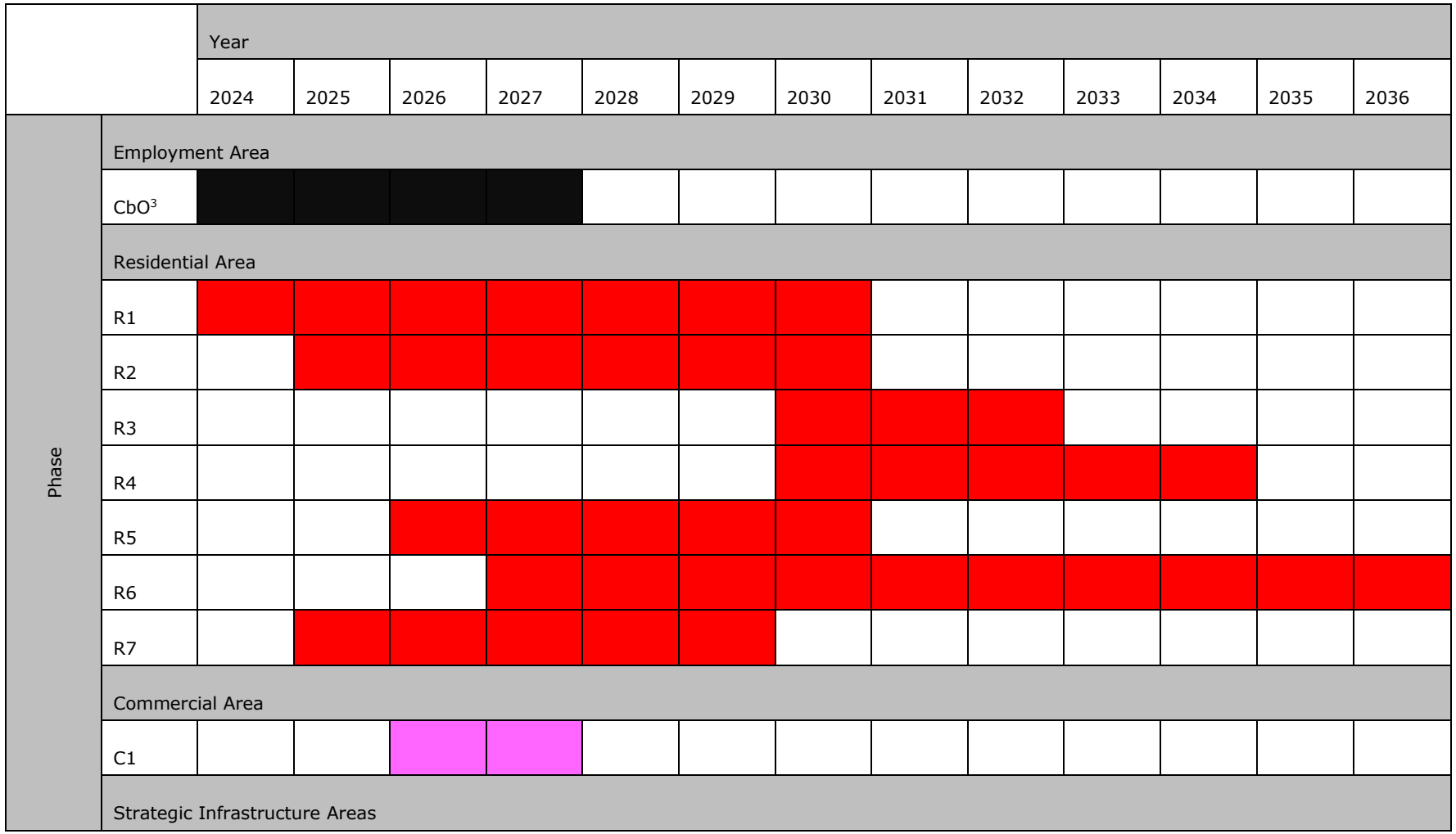
7.4.2 Strategic green space and drainage infrastructure is proposed across the entirety of the Site (as shown within the Parameter Plan, (Bond Bryan Drawing reference BWM BBA ZZ XX DR A 1052).

7.4.3 As detailed within the Landscape Masterplan (Gillespies reference P11754-00-001-GIL-0100), a range of habitats are proposed within the strategic green space, to include native hedgerows, broadleaved woodland, scattered trees, orchards, wildflower meadows and native scrub. Furthermore, the drainage infrastructure areas will include partially wet attenuation basins and swales, with wet scrub and meadow.

7.4.4 The Phasing Plan details the time frames in which the Strategic Infrastructure areas (including link road), Employment Area, Residential Areas and Commercial Area are to be brought forward, and is summarised below.

7.4.5 The previous application did not include a Phasing Plan, and therefore the cut and fill exercise required to level the site was to be brought forward in one phase. As a result, all habitats due to be removed to facilitate the development were to be lost before the construction of the Site began, and before the strategic infrastructure was brought forward.

7.4.6 The implementation and completion of each area within the development will be staggered, as will the Phases within each area. Construction would begin within the Employment (CbO), Residential (R1) and Strategic Infrastructure (SI1) sectors in 2024, with subsequent works within the Commercial (C1) Residential (R2 – R7) and Strategic Infrastructure (SI2 – SI5) commencing and completing periodically until 2036, when all works are expected to be finished.



[3] Infrastructure and earthworks from 2024 – 2026, units from 2025 – 2027.

	SI1[4]													
	SI2[5]													
	SI3													
	SI4													
	SI5													

[4] SI1 includes northern section of the link road.

[5] SI2 includes southern section of the link road.

7.4.7 The Strategic Infrastructure areas are to come forward alongside initial construction, so as the majority of landscaping and drainage is in place by 2026, with completion in 2027. As such, a large proportion of compensation for the loss of habitats necessary to facilitate the development will be in place before works on R3, R4 and R6 commence.

7.4.8 Ensuring that most Strategic Infrastructure is in place within the initial years of construction prevents the complete loss of habitat across the entire development Site over the course of construction (2024 – 2036). This will ensure there is suitable connective habitat available throughout construction for sensitive species known to use the Site, particularly birds and bats. As such, adverse impacts associated with complete loss of habitat (as was previously the case) or habitat fragmentation will be, for the most part, avoided.

7.4.9 Lapwing and skylark are both known to use the Site for breeding and overwintering and, as detailed in the impact assessment below, will likely see residual impacts associated with displacement due to the complete loss of suitable habitat on Site. The Phasing Plan proposed will delay these residual impacts by retaining habitat throughout the course of construction, until the last Phases (R3 and R4) begin in 2030. However, the amount of habitat available will gradually reduce, meaning that skylark and lapwing populations in particular will gradually be displaced from commencement of initial Phases in 2024, to the commencement of the final Phases in 2030. Ultimately, both species (key ecological features identified from the breeding bird surveys) will be displaced from site, due to permanent loss of suitable habitat.

7.4.10 The landscaping plan details the habitats that are to be brought forward within each strategic landscaping area. This includes new areas of broadleaved woodland, species-rich grassland, wildflower meadows, gorse scrub and native scrub. A total of 13 permanently (but minimally) wet SUDs basins, 5 dry SUDs basins and 1 pond are also proposed, which will be supplemented with marginal planting of wet meadow and wet scrub. Within the grassland areas will be a number of scattered trees and orchards, and lengths of species-rich native hedgerow are proposed.

Statutory Designated Sites - SACs and SPA

7.4.11 In the previous ES Chapter, impacts to statutory designated sites resulting from the construction phase of the development were considered to be related to pollution (air, water) and the disturbance of supported species and habitats, as is the case in this Chapter.

7.4.12 Denby Grange Colliery Ponds SAC is designated for its notable populations of GCN and is located approximately 8.2 km from the Site. Considering the distance between the designated site and the Site, plus the lack of hydrological links, the development is not anticipated to result in or disturbance to GCN associated with the SAC.

7.4.13 The Peak District Moors / South Pennine Moors Phase 1 SPA is located 11.5km from the Site. The arable fields and woodland present on Site have the potential to support species the SPA is designated for (golden plover and short-eared owl), however it is unlikely that the Site would support individuals associated with the SPA. The BBS and WBS surveys support this. Although an individual golden plover was recorded on the Site with the WBS surveys (WA, 2023), it is unlikely they will be using the Site regularly in large numbers and short-eared owl was not recorded. Furthermore, due to the separation distance between the Site and the SPA, noise and vibration pollution are unlikely to disturb supported species.

7.4.14 South Pennine Moors SAC is also situated approximately 11.5 km from the Site, and is designated for its habitats including heathland, bogs and sessile oak woodland, none of which are associated with the Site. In addition, the SAC (plus the other two statutory sites) is considerably distant from and not hydrologically linked to the Site. Considering this, and the results of the Air Quality Assessment (Chapter 13) which predicts no significant air quality effects, pollution impacts (such as dust deposition and water contamination) are considered to be **Negligible.**

7.4.15 As such, activities associated with the construction phase of the development will likely have a **Negligible adverse** effect on Statutory Designated Sites at an **International** level. Confidence in this assessment is **High.** Therefore, impacts to statutory sites do not differ significantly from those discussed in the previous ES Chapter, which considered there to be no significant effect.

7.4.16 Furthermore, the previous ES Chapter considered increases to recreational pressure to be the main impact resulting from operation of the Site. Recreational pressures are also the main impact considered here. As the previous application was for the development of an extra 200 residential units, any adverse impacts resulting from the development will likely be to a slightly lesser extent.

7.4.17 Increased recreational pressure through residents from the proposed developments visiting Denby Grange Colliery Ponds, South Pennine Moors and Peak District Moors is possible. However, all three designated sites are situated more than 8 km from the site and there is an availability of open space within the proposed development and in the surrounding land in Barnsley. Considering this, and size of the development relative to existing populations surrounding the designated sites, the likelihood of the development leading to a significant increase in visitors is thought to be unlikely.

7.4.18 The Class uses related to the employment area of the development that are listed under this application include E (Commercial, Business and Service), B2 (General Industrial) and B8 (Storage or Distribution). This remains the same as with the previous application. These uses do not include any heavy industrial processes that

would likely result in noise, vibration, smell fumes, smoke, soot, ash, dust or grit, which would likely be detrimental to statutory sites. Given this, and the results of the Air Quality Assessment (Chapter 13), the employment aspects of the development are not anticipated to adversely affect statutory sites.

7.4.19 Therefore, in the absence of mitigation, the operational phase of the development will likely have a **Negligible adverse** impact to Statutory Designated Sties at an **International** level. Confidence in this assessment is **High.** As with the construction phase, operational impacts are comparable to those discussed in the preceding ES Chapter.

Non-statutory Designated Site – LWS

7.4.20 As with the statutory sites, the preceding ES Chapter discussed the potential impacts of pollution associated with the construction of the proposed development on non-statutory sites. Impacts differed depending on the distance between the designated site and the proposed development. Impacts resulting from the construction phase of the development on non-statutory sites are not thought to be significantly different for this application.

7.4.21 Redbrook Pastures LWS is located adjacent to the Site to the east. No habitats within the LWS will be altered or removed to facilitate the development, however works associated with the construction phase have the potential to result in fuel spill, water contamination, vibration, noise and light spill and encroachment into root protections zones, in the absence of mitigation. The air quality assessment (Chapter 13) found dust and emissions effects to be negligible although the potential for earthworks to cause high dust levels, without mitigation was noted. As such, in the absence of mitigation, there will be a temporary **Moderate adverse** effect on Redbrook Pastures LWS at a **County** level. Confidence in this assessment is **High.**

7.4.22 Hugset Wood LWS is located on the other side of the M1 Motorway, approximately 0.55km to the east of the Site. The Site is designated for its woodland habitats including Ancient Woodland and Ancient Woodland indicator species, and also supports fauna including willow tit *Poecile montanus.* Considering the distance between the Site and the LWS and the results of the Air Quality Assessment (Chapter 12), pollution and disturbance effects to the woodland habitat and its supported species are thought to be **Negligible.** Confidence in this assessment is **High.**

7.4.23 Daking Brook LWS, Barnsley Canal at Wilthorpe LWS and Silkstone Fall Wood LWS are all located 1 km or more from the Site. These LWS support riparian and/or woodland habitat, with species including willow tit, English bluebell and other Ancient Woodland indicator species. Due to the separation distance between the Site and all three LWS and the lack of obvious hydrological links, activities associated with the construction phase of the development are not anticipated to have a significant adverse effect to the habitats and supported species. Therefore, in the absence of mitigation, there will be a **Negligible adverse** impact to Daking Brook LWS, Barnsley Canal at Wilthorpe LWS and Silkstone Fall Wood LWS. Confidence in this assessment is **High.**

7.4.24 Similarly, the previous ES found it probable that there would be a significant effect for Redbrook Pastures LWS, but not for the remaining LWS sites.

7.4.25 The impacts resulting from the operational phase of the development on non-statutory sites also do not differ significantly between this assessment and the previous ES Chapter. Impacts are mainly associated with increases to recreational

pressures, which again differs depending on the distance between the proposed development and the designated site.

7.4.26 Once operational, recreational pressure will be particularly increased for Redbrook Pastures, as it is located directly adjacent to Site. Increased recreational pressure would likely adversely affect botanical interest through trampling, wildflower picking, dog fouling and littering. Redbrook Pastures LWS comprises two fields either side of Church Street, of which the southern field supports a greater intrinsic diversity in comparison to the northern field.

7.4.27 Currently, there is no obvious thorough fare in the southern field and therefore public access is unlikely. This field will also not be accessible from the proposed development, therefore significant increases in recreational pressure are not expected. An existing public footpath dissects the northern field, linking Church Street to the south with the Site to the north-west. As such, there will already be a reasonable level of public access through the LWS from the surrounding residential areas.

7.4.28 Considering the above, the size of the development relative to the existing urban populations in the area and the area of open green space that will be available to residents within the development, any increases in recreational pressure are not anticipated to have a significant adverse effect to Redbrook Pastures LWS in its current state.

7.4.29 The citation for the LWS discusses the potential for the diversity of the northern field to increase should current grazing practices cease. Although protective management measures have been discussed with the landowner, an agreement could not be reached. As such the current horse grazing is expected to continue and consequently the species diversity of the northern field is not expected to improve.

7.4.30 Furthermore, as Redbrook Pastures sits immediately adjacent to the Site, the operational development may lead to noise disturbance and light spill onto sensitive habitats within the LWS, and consequently disturbance to supported fauna. Additionally, air pollution associated with increased vehicle use may also adversely affect the LWS.

7.4.31 However, the LWS is already subject to an existing level of noise disturbance, light and air pollution from the urban settlement (including a primary school directly adjacent to the LWS) to the east, and from Church Street which dissects the LWS. Furthermore as discussed above, the air quality assessment (Chapter 12) found dust and emissions effects to be negligible, and the existing woodland will form a screening belt between the LWS and the Site.

7.4.32 The operational phase of the development is therefore anticipated to have a **Negligible adverse** effect on Redbrook LWS at a **County** level. Confidence in this assessment is **High.**

7.4.33 As Hugset Wood LWS is located 0.55km to the west of the Site and is accessible through public footpath, it is likely that residents from the proposed development will access the LWS thereby increasing recreational pressures. However, it is anticipated that residents are more likely to access Redbrook Pastures LWS and to use the open greenspace made available within the development than access Hugset Woods. Furthermore, no significant adverse effects through noise, air and light pollution are anticipated. This is due to the distance between the Site and the LWS, the results of the Air Quality Assessment and the existing M1 Motorway which subjects Hugset Wood LWS to an existing level of noise, air and light pollution. As

such, the operational phase of the development is expected to have a **Negligible adverse** effect to Hugsett Wood at a **County** Level. Confidence in this assessment is **High.**

7.4.34 The operation of the development is also not anticipated to result in significant adverse effects to Daking Brook LWS, Barnsley Canal at Wilthorpe LWS and Silkstone Fall Woods LWS. These designated sites are all situated a minimum of 1 km from the Site, with no obvious terrestrial or hydrological links. Consequently, no disturbance or pollution impacts are expected. Additionally, recreational pressures to the sites are expected to be less likely than Hugsett Wood and Redbrook Pastures, due to the availability of alternative recreational greenspace between these three LWS and the Site. In the absence of mitigation, the operation of the proposed development will have a **Negligible adverse** impact on Daking Brook LWS, Barnsley Canal at Wilthorpe LWS and Silkstone Fall Woods LWS. Confidence in this assessment is **High.**

7.4.35 Similarly, the previous ES Chapter found it to be probable that there would be no significant adverse effects to the LWS sites.

Habitats

Broad-leaved semi-natural woodland (including ancient woodland)

7.4.36 Impacts to Craven Wood ancient woodland are considered in detail in Appendix 7.8. This includes an analysis of the development impaxts to ancient woodland provided in the Standing Advice.

7.4.37 During construction, the woodland on Site will be retained. As a result, the development has the potential to impact this retained woodland through encroachment of machinery, compaction of soil or damage to roots. Also, from pollution associated with dust deposition, surface water run-off and fuel spill. In the absence of mitigation, this would result in a temporary **Minor adverse** impact to broadleaved woodland at a **Local** level. Confidence in this assessment is **High.**

7.4.38 The preceding ES Chapter concluded that there would have no significant effect to the conservation status of this habitat. The greenspace proposed as a part of the development includes several public footpaths, of which one extends north through the woodland to meet the existing public footpath that crosses Redbrook Pastures LWS. Should members of the public stray from these paths, trampling, wildflower picking, dog fouling and littering may adversely affect the botanical interest of the ground flora. Although, as the woodland is currently dissected by an existing footpath it is therefore already subject to a level of recreational pressure.

7.4.39 In addition to the above, areas of broadleaved woodland are proposed within the employment area, south of Hermit Lane. Newly planted woodland will take many years to establish, and if not managed appropriately may fail. Given the existing woodland that is being retained, failure to establish will not result in a significant adverse effect. However, if inappropriate non-native species are used and successfully establish and spread, they could threaten the biodiversity value of the existing habitat.

7.4.40 The ancient woodland assessment concludes that overall there will be no major adverse effects to Craven Wood. It is considered that once operational, the development would have a permanent **Minor adverse effect** upon broad-leaved semi-natural woodland at a **Local - County** level. Confidence in this assessment is **High.**

7.4.41 Similarly, the previous ES Chapter discussed the risk of recreational pressures disturbing woodland habitat and of failure to manage new habitat appropriately, concluding there would be a significant adverse effect to broadleaved woodland in the operational phase.

7.4.42 In the previous ES Chapter, Ancient Woodland was not identified on Site. Therefore, no impacts to Ancient Woodland were specifically discussed.

Dense and Scattered Scrub

7.4.43 During construction, most areas of existing scrub will be removed. This includes areas of bramble *Rubus fruticosus,* hawthorn *Crataegus monogyna* and rose *Rosa spp.* One area of dense scrub to the south-east of the Site will be retained, which comprises mature hawthorn and semi-mature ash *Fraxinus excelsior* and elder *Sambucus nigra*. As such, this will be subject to pollution associated with construction activities, including dust deposition, surface water run-off and fuel spill. Additionally, the retained area of scrub would be at risk from compaction through machinery encroachment. Therefore, in the absence of mitigation, there will be a temporary **Moderate adverse** impact to scrub at a **Site** level. Confidence in this assessment is **High.**

7.4.44 Several areas of scrub will be included within the proposed green spaces, particularly around the existing and new woodland and the SUDs features. The retained area of scrub will also be set within the green space. As discussed above for woodland, public footpaths will dissect these greenspaces and hence there will be a risk of residents straying from these footpaths and comprising the scrub habitat (through trampling, dog fouling, littering). Consequently, the operational phase of the development will have a permanent **Minor adverse** impact on scrub at a **Site** level. Confidence in this assessment is **High.**

7.4.45 Under the previous proposals, all scrub (0.26ha) was to be lost during construction, and areas of gorse and mixed scrub totalling 5.2ha were proposed. However, the previous ES Chapter considered existing scrub on Site to be of Negligible importance, therefore impacts to this habitat were not considered.

Broad-leaved Scattered Trees

7.4.46 Under the proposals, a low number of trees are to be lost to the development. The construction phase of the development has the potential to impact the retained trees through dust deposition, surface water run-off, and fuel spill associated with machinery use. Additionally, the use of machinery on Site may lead to soil and root compaction and accidental damage to trees. These effects will likely have a temporary **Minor adverse** impact on scattered trees at a **Local** level. Confidence in this assessment is **High.**

7.4.47 Similarly, the previous ES Chapter concluded that there would be a significant adverse impact to scattered trees, due to loss of habitat and damage/compaction associated with machinery use and the loss of trees. Loss of scattered trees across the Site was anticipated due to the cut and fill exercise, which has now been amended to retain as many trees as possible. As such the loss of scattered trees is now expected to be less.

7.4.48 During the operational phase of the development, scattered trees will be planted across the Site. Retained and planted trees will be subject to recreational pressures during the operational phase of the development (e.g. tree climbing by residents). However, it is not thought that this is likely to significantly impact trees. Furthermore, the use of inappropriate specimens and species would degrade the

ecological value of planted trees. Therefore, in the absence of mitigation, there will be a permanent **Minor adverse** effect to scattered trees at a **Local** level. Confidence in this assessment is **High.**

7.4.49 Previously, 4.75ha of street trees (1,166 individual trees) were proposed. As with the construction phase, impacts to scattered trees during the operational phase of the development are comparable to the preceding ES Chapter, where a significant adverse effect was concluded. The impacts previously were also associated with recreational pressures and inappropriate planting.

Hedgerows

7.4.50 To allow for the construction of the development, the majority of hedgerows will be lost. Some hedgerows along Hermit Lane, and to its north, will be retained under the proposals. Retained hedgerows will therefore be subject to pollution (dust deposition, water run-off, fuel spill) and soil compaction through machinery encroachment. In the absence of mitigation, there would be a temporary **Major adverse** impact at a **District** level. Confidence in this assessment is **High.**

7.4.51 Under the previous proposals, all hedgerows (9.02 km) were due to be lost to allow for the construction of the development. As such there was a more significant loss of hedgerows, and a significant adverse effect was anticipated.

7.4.52 Several new species-rich hedgerows are proposed, particularly to the south of Hermit Lane. Hedgerows will therefore be subject to a level of recreational pressure as a result of the operational phase of the development, including soil compaction through trampling and degradation of ground flora biodiversity through dog fouling and littering. However, most of the hedgerows are proposed around the employment area and away from the proposed footpaths, where resident access is unlikely. Additionally, the use of inappropriate shrub species and inefficient management of planted hedgerows would compromise their biodiversity value. In the absence of mitigation, the operational phase of the development would likely have a permanent **Minor adverse** impact to hedgerows at a **Local** level. Confidence in this assessment is **High.**

7.4.53 In the previous ES Chapter the effect of the operation of the development was anticipated to have a significant adverse effect, resulting from inappropriate planting and management practices.

Neutral Grassland

7.4.54 The neutral grassland habitat to the east of the Site will be retained during the construction phase of the development. As such, it will likely be subject to adverse effects through pollution (dust deposition, surface water run-off and fuel spill associated with machinery use) and compaction through machinery encroachment. In the absence of mitigation, there will be a temporary **Moderate adverse** effect at a **District** level. Confidence in this assessment is **High.**

7.4.55 Several areas of neutral grassland will be created as a part of the landscaping design. The proposed areas will form public open space and will be dissected by public walkways. As a result, they will be subject to impacts should members of the public stray from the footpaths. Trampling, dog fouling, picking of wildflowers and littering would all affect the botanical interest of the neutral grassland. Therefore, in the absence of mitigation, there will be a permanent **Minor adverse** impact to neutral grassland at a **District** level. Confidence in this assessment is **High.**

7.4.56 Previously, the area of neutral grassland to the west of Craven Wood would be lost to facilitate the development, to be replaced 4.96ha of neutral grassland within the drainage areas. However, the previous ES Chapter considered neutral grassland to be of Negligible importance, therefore it was scoped out of further assessment and was not subject to an impact assessment.

Modified Grassland

7.4.57 To facilitate the development, all modified grassland fields will be lost. However, these fields have limited intrinsic value, and alternative habitat is available in the wider area. Therefore, the complete loss of this habitat will result in a **Negligible adverse** impact to modified grassland at a **Site** level. Confidence in this assessment is **High.**

7.4.58 The areas of modified grassland recorded in 2023 were initially recorded as improved grassland in the previous surveys. All of the improved grassland was also to be lost. Improved grassland was assessed as being of Negligible importance in the previous ES Chapter and was therefore scoped out of further assessment.

Standing Water

7.4.59 Ponds 7 and 8 will both be lost during the construction phase to facilitate the development. The loss of these habitats will have a permanent **Moderate adverse** effect at a **Local** level. Confidence in this assessment is **High.**

7.4.60 Pond 4, located within Craven Wood, will be retained during the construction phase. In the absence of mitigation, the pond may be subject to pollution associated with works, particularly dust deposition and water run-off (in the absence of mitigation). As such, there will therefore be a temporary **Moderate adverse** effect to standing water at a **District** level. Confidence in this assessment is **High.**

7.4.61 A total of 11 SUDs basins and 1 pond are proposed in addition to Pond 4. As with previous habitats, they will be subject to a level of recreational pressure from residents, should they stray from the proposed footpaths. This will result in a permanent **Minor adverse** impact to standing water at a **Local-District** level. Confidence in this assessment is **High.**

7.4.62 Ponds 7 and 8 were presumably dry in previous survey years and were therefore not included within the previous ES Chapter. Pond 7 was therefore previously under improved grassland, which was lost to facilitate the development. Pond 8 was previously assessed as marshy grassland, which was to be retained. Overall, standing water on Site was previously thought to be of Negligible importance, therefore no impact assessment was provided for Pond 4.

Running Water

7.4.63 With reference to the drainage strategy plan (Chapter 11) and the Parameters Plan 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.

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

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

7.4.66 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.

7.4.67 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.

7.4.68 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

7.4.69 During the construction phase of the development, all the buildings at Hermit House Farm will be demolished. This includes four buildings with the potential to support roosting bats, two of which have been confirmed to support minor and non maternity common pipistrelle and brown long-eared bat roosts. Two trees with the potential to support roosting bats will also be removed to facilitate development. As a result, there will be a loss of potential roosting habitat and at least 3 bat roosts.

7.4.70 Therefore, in the absence of mitigation, there will likely be a permanent **Major adverse** impact to roosting bats at a **Local** level. Confidence in this assessment is **High.**

7.4.71 The majority of trees with bat roost potential will be retained on Site during construction. Furthermore, Craven Wood extends off-Site to the east and may provide more potential roosting opportunities. In the absence of mitigation, spill from temporary lighting used for construction has the potential to disturb bat roosting habitat on and off-Site. This will likely result in a temporary **Minor adverse** effect to bats at a **Local** level. Confidence in this assessment is **High.**

7.4.72 The previous ES chapter considered that the loss of potential roosting features during construction would not lead to a significant adverse impact to bats. Although the majority of trees with bat roost potential that were previously due to be removed will now be retained, and hence the loss of potential roost features is significantly decreased, confirmed bat roosts have now been identified on Site. Therefore, impacts to roosting bats will be more significant than previously thought.

7.4.73 The majority of hedgerows will be removed to facilitate the development, hence, there will be a reduction in the availability of foraging and commuting bat habitat, and existing commuting routes will be severed. Some foraging and commuting habitat will be retained within the woodland, which extends to the east and provides further foraging and commuting opportunities off-Site.

7.4.74 The Site is not well connected to alternative bat habitat in the locality as the Site is mainly surrounded by urban (residential) land. Extensive areas of woodland (including Hugset Wood LWS) and open arable land with hedgerow networks are available to the south and east, but these are separated from the Site by the M1 motorway. Research shows that major roads have a negative effect on bat foraging activity and the number of species recorded (Berthinussen & Altringham, 2012). It is therefore thought the M1 will pose a significant barrier to bats that are dispersed as a result of the construction phase of the development.

7.4.75 Therefore, in the absence of mitigation, the loss of foraging and commuting habitats will result in a permanent **Moderate adverse** to foraging and commuting bats at a **Local** level. Confidence in this assessment is **High.**

7.4.76 Additionally, during the construction phase of the development, spill from temporary lighting used will result in disturbance to retained bat foraging, commuting and roosting habitat on Site, and to such habitats that can be found adjacent to the Site to the east. In the absence of mitigation, this will have a temporary **Moderate adverse** impact on roosting, foraging and commuting bats at a **Local** level. Confidence in this assessment is **High.**

7.4.77 Impacts to foraging and commuting bats during the construction phase of the development are thought to be similar as previously assessed, when impacts were thought to be significantly adverse and associated with habitat loss and fragmentation.

7.4.78 Once operational, suitable bat roosting, foraging and commuting habitat will be present in the retained proposed habitats (woodland, scattered trees, hedgerows, ponds, grassland). These habitats will be subject to recreational impacts (as previously discussed in this Chapter), which will subsequently impact bats. For example, damage to trees (through vandalism or tree climbing) may damage potential roosting habitat or disturb bat roosts. Also, degradation of habitat quality and diversity through public use would likely decrease the number of invertebrates, thereby depleting food sources for bats. Residents will also likely keep domestic pets such as cats, which are known to predate bats.

7.4.79 In addition to the above, spill from permanent lighting used in the operational phase onto suitable bat habitats will also disturb roosting, foraging and commuting bats. The Ancient Woodland buffer will prevent permanent lighting being erected within 15m of this habitat, therefore a significant proportion of bat habitat will remain unlit. However, the remaining habitats are intersected with public footpaths, residential and commercial development which will require lighting.

7.4.80 In the absence of mitigation, the operational phase of the development will have a permanent **Moderate adverse** impact to roosting, foraging and commuting bats at a **Local** level. Confidence in this assessment is **High.**

7.4.81 The previous ES Chapter concluded it probable that there would be a significant adverse impact to bats in the operational phase, which was due to spill from lighting.

Breeding Birds

7.4.82 In the absence of mitigation, habitat clearance during the construction phase of the Proposed Development will likely result in disturbance to breeding birds through the destruction of active nests, if such habitat is removed during the breeding season (March – August inclusive). In particular, hedgerows, arable fields and modified grassland fields are to be lost to development. This will likely result in a permanent **Moderate adverse** impact to breeding birds at a **Local** level. Confidence in this assessment is **High.**

7.4.83 The retention of scattered trees, woodland and hedgerows will provide suitable breeding habitat for some species (passerines, pigeons, corvids, raptors, thrushes) during the course of construction. Furthermore, garden birds will likely utilise the surrounding gardens for foraging and breeding. Disturbance through noise, dust and vibration from construction activities may lead to the abandonment of nests and temporary displacement of birds associated with these retained habitats.

Disturbance to breeding birds through habitat clearance and disturbances will therefore have a temporary **Moderate adverse** effect at a **Local** level. Confidence in this assessment is **High.**

7.4.84 Furthermore, breeding farmland species including skylark, lapwing, yellowhammer and grey partridge are likely to be more adversely impacted than those species mentioned above. The majority of hedgerows will be lost along with all the open grassland and arable fields, meaning farmland species relying on them will likely be displaced.

7.4.85 Latest surveys (WA, 2023) recorded a peak count of 16 skylark, 10 lapwing, 2 grey partridge and 1 yellowhammer. As only one or two individuals of grey partridge and yellowhammer were recorded, they are presumed to use the Site only occasionally. It is therefore thought that construction will only adversely affect skylark and lapwing, and not grey partridge or yellowhammer (given the very low numbers of the latter two species). There will therefore be a permanent **Major adverse** impact to breeding skylark and lapwing birds at a **Local** level. Confidence in this assessment is **High.**

7.4.86 In addition to the above, the active nests of all wild birds receive legal protection, and therefore mitigation is required to ensure legal compliance.

7.4.87 The preceding ES Chapter also thought it probable that construction of the proposed development would likely have a significant adverse impact to breeding birds, through habitat loss and disturbance of active nests.

7.4.88 Once operational, habitat suitable for breeding passerines, pigeons, corvids, raptors and thrushes will be present within the retained and created habitats (woodland, hedgerows, scattered trees, ponds, grassland). Breeding species within these habitats will likely be subject to impacts associated with recreation including noise disturbance, destruction of nests through trampling and predation from domestic pets. This will result in a permanent **Minor adverse** impact to breeding birds at a **Local** level. Confidence in this assessment is **High.**

7.4.89 In contrast to this, the previous ES Chapter predicted that there would be no significant impact to breeding birds during the operation of the development. This was due to the increase in available breeding habitat for the majority of birds that were recorded on Site during the BBS. However, the previous Chapter did not consider the impact of recreational pressure to birds using this habitat. Therefore, although there will also be an increase in breeding habitat under the current proposals, an overall adverse impact is anticipated.

7.4.90 Furthermore, it was previously anticipated that the overall assemblage of birds would change during operation of the development when compared to the baseline breeding bird assemblage, which will also be likely with this application. As previously, the number of farmland species is expected to decrease and an increase in garden and woodland edge species is expected. Also, one permanent pond and 11 SUDs basins that retain water and have marginal vegetation are proposed. This will likely lead to an increase in habitat suitable for wetland species (reed bunting, sedge warbler, reed warbler). However, these habitats are not thought likely to be suitable for waterfowl, the numbers of which were expected to increase with the previous application.

<u>Wintering Birds</u>

7.4.91 During construction of the development, the majority of hedgerows will be lost. There will therefore be a loss of habitat available for passerine species of wintering

bird including redwing, fieldfare and greenfinch. However, the woodland and most scattered trees on Site will be retained and there is an availability of hedgerow habitat to absorb displaced birds within the wider area. Retained habitats will also provide wintering pigeon, corvid, raptor and thrush habitat will during construction.

7.4.92 Such habitats will however be subject to a level of disturbance through noise, vibration and dust deposition. Habitats in the surrounding residential gardens and woodland will also be subject to these disturbances. Therefore, the construction phase of the development will also result in a temporary **Minor adverse** impact to wintering birds (passerines, pigeons, corvids raptors and thrushes) at a **Local** level. Confidence in this assessment is **High.**

7.4.93 Furthermore, the loss of arable habitats including the open fields of modified grassland will result in the complete loss of wintering skylark, lapwing and golden plover habitat. Only one individual golden plover was recorded during the WBS, therefore adverse impacts are not anticipated for this species. However, peak counts of 10 lapwing and 18 skylark were recorded. Alternative habitat is available within the wider area to the north-east, east and south, however is separated from the Site by the M1 motorway and by urban area. These species will be displaced as a result of construction, resulting in a permanent **Major adverse** impact to skylark and lapwing at a **Local** level. Confidence in this assessment is **High.**

7.4.94 Once operational, wintering habitats suitable for passerines, pigeons, corvids, raptors and thrushes will be present in the retained and created woodland, hedgerows and grassland. As with the breeding birds phase, wintering birds utilising these habits will likely be subject to impacts associated with recreation of the residents, including noise disturbance and predation by domestic pets. In the absence of mitigation. However, this is thought to result in a **Negligible adverse** impact to wintering birds at a **Local** level. Confidence in this assessment is **high.**

7.4.95 Previously, no WBS were carried out on Site. Therefore, no wintering bird data was available in the previous application and they were not included as a receptor in the preceding ES Chapter. Impacts were considered for breeding birds only.

Invertebrates

7.4.96 To facilitate the development, several habitats of importance to invertebrates will be lost. This includes the majority of hedgerows and the two ponds to the south of Hermit Lane. As a result, there will be a permanent loss in available habitat during construction. In the absence of mitigation, this will result in a permanent **Major adverse** habitat to invertebrates at a **Local** level. Confidence in this assessment is **High.**

7.4.97 The more valuable habitats to invertebrates on Site are the woodland and the neutral grassland to the west of Craven Wood, which will be retained. However, these habitats will be subject to temporary disturbances and pollution associated with construction activities, including dust deposition, noise and vibration, surface water run-off and fuel spill. There will therefore be a temporary **Moderate adverse** effect to invertebrates at a **Local** level. Confidence in this assessment is **High.**

7.4.98 Once operational, retained and created areas of woodland, standing water, species-rich neutral grassland and lengths of hedgerow will be present. There will therefore be an increase in available invertebrate habitat in comparison to the baseline. However, there will be numerous public footpaths dissecting the new woodland and greenspaces, meaning there will be a level of recreational pressure. Should the public stray from these footpaths, there will be the potential for trampling, wildflower picking, dog fouling and littering to negatively impact the botanical

interest of these habitats thereby reducing their suitability for invertebrates. Furthermore, woodland aspects that are particularly beneficial to invertebrates such as veteran features in trees and dead wood generally take many years to establish naturally. In the absence of mitigation, there will likely be a permanent **Minor adverse** effect to invertebrates at a **Local** level. Confidence in this assessment is **High.**

7.4.99 An invertebrate survey was not carried out for the previous application, therefore they were not included as a receptor within the previous ES and no impact assessment was undertaken.

Great Crested Newts (GCN); Reptiles, Badger & Otter

7.4.100 Badger, otter, reptile and GCN were all considered likely absent from the site and of negligible importance. However, if these species were to use the site, for example for breeding or commuting, construction and operation activities have the potential to cause harm to or disturb these species and / or their habitat. Such harm/disturbance would constitute **a legal offence**.

7.4.101 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

7.4.102 A stand of Japanese knotweed was previously identified along the western boundary of the Site. This now appears to have been subject to treatment, and no fresh growth has since been observed. This does not discount the possibility of rhizomes or other plant material still being present. As such there is the potential for both the construction and operational phases of the development to lead to it being spread across or away from the Site, resulting in a **legal offence.**

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.

Non-statutory Designated Sites - LWS

7.5.2 A Construction Environmental Management Plan (CEMP) will be prepared that will provide practical measures to avoid and minimise the effect of the construction and operation of the Proposed Development on Redbrook Pastures LWS. This will include pollution control measures, buffer zones and tree root protection areas (RPA).

7.5.3 A sensitive lighting scheme will also be developed and included with the CEMP. This This will focus on minimising light spill onto the adjacent LWS, primarily by avoiding working outside of local sunlight hours. If this is not achievable, artificial lighting will be directed away from sensitive habitats and towards the construction, by using hoods and cowls.

Habitats

7.5.4 As the impacts for many of the habitats discussed above were the same, the mitigation is discussed in combination below.

7.5.5 The CEMP will also provide measures to minimise the effects of the construction phase of the development on the habitats that will be retained, including broadleaved woodland/Ancient Woodland, scrub, scattered trees, hedgerows, neutral grassland, standing water and running water. Pollution control measures will minimise the risk of these habitats being subject to dust deposition, surface water run-off and fuel spill.

7.5.6 Additionally, the CEMP will detail protective buffers to avoid machinery encroachment and subsequent compaction of retained habitats, including scattered trees, hedgerows and Ancient Woodland. RPA buffers will be dependent on the species and size of the tree, and the hedgerow and Ancient Woodland buffer will be a minimum of 15m from the canopy edge. The CEMP measures will be assured by the presence of an Ecological Clerk of Works (ECoW) during construction activities.

7.5.7 Habitats that will be partially lost to facilitate construction include dense and scattered scrub, broadleaved scattered trees, hedgerows and standing water. These losses will be compensated for by habitats that are proposed within the strategic landscaping areas, as shown within the landscape masterplan.

7.5.8 Areas of native, gorse and wet scrub planting have been proposed, particularly around the retained Ancient Woodland and waterbodies. New areas of broadleaved woodland would also be planted, mainly around the majority of the periphery of the employment area and along some stretches of the boundary of the Residential area. Furthermore, areas of wet meadow, wildflower meadow and species-rich grassland will be created across the strategic landscaping areas and will include a number of scattered trees and community orchards. Finally, one pond, 11 SUDs and one pond will be created. The SUDs will mainly be within the Residential Area, with the pond proposed in the south-east of the Employment Area.

7.5.9 There will therefore be a considerable increase in the area of each of these habitats, which will compensate for the losses during construction. The Phasing Plan will also ensure that habitat is lost periodically throughout the course of construction and that the proposed strategic landscaping will be in place before several of the Residential Phases are implemented. As such, habitats will be present across the Site throughout construction.

7.5.10 Outline habitat creation and management measures are set out in Biodiversity Environmental Management Plan (BEMP) (Appendix 7.8). Further details of the establishment and long-term management of created habitats will be set out within a Landscape Environmental Management Plan (LEMP) anticipated to be secured by planning conditon. The LEMP will also detail measures to maintain and enhance the habitats that will be retained during construction, including hedgerows, species-rich grassland and scattered trees. Furthermore, the LEMP will include methods to reduce the time needed for each habitat to become mature, for example by planting more mature specimens of hedgerow and tree.

7.5.11 Measures set out within the LEMP will mitigate against the risk of habitats failing to establish, and sufficient management will maintain the condition of each habitat. Furthermore, management will mitigate against the risk of recreational pressures degrading the habitats once the development is in operation, for example by removing litter.

7.5.12 The LEMP will also detail appropriate species to use for planting. This will include the relevant Emmorsgate mixes for the species-rich grassland, wildflower meadows and wet meadows. Furthermore, the LEMP will detail species to be planted to enhance and create woodland, hedgerows and scattered trees. This will ensure that

only the most appropriate, native species are used for planting across the strategic landscaping areas.

7.5.13 Compliance with the LEMP will mitigate against the risk of inappropriate planting methods, management measures and the use of non-native species reducing the biodiversity value of habitats.

Bats

7.5.14 Two common pipistrelle roosts and a single low status brown long-eared bat roosts will be lost to the development. Additionally, two trees and an additional building with the potential to support roosting bats will be lost.

7.5.15 Bat roosting boxes will be installed across the Site to mitigate for the loss of suitable bat features. A combination of integral and woodstone-style, tree-mounted boxes will be used, which will provide roosting opportunities for multiple bat species. A total of 50 bat boxes will be installed across the Site, and an ecologist will provide details of box specifications and installation locations.

7.5.16 At least 20 of the 50 boxes should be erected in advance of the demolition of the buildings, to provide alternative roosting opportunities for bats that may be displaced as a result of the demolition.

7.5.17 Once operational, the bat boxes will be subject to maintenance at least once every five years. This will entail cleaning out of droppings and inactive birds nests (active nests will be left until nesting attempts are complete) and repairs/replacement of damaged boxes. Any sightings of bats or evidence of their use of the boxes will be recorded.

7.5.18 Given the existing roosts and the potential for the irregular use of bat roosts within additional trees and buildings, the following additional measures are recommended:

- Update bat roost surveys (preliminary roost assessments and dusk emergence / dawn re-entry surveys) should be undertaken on trees and buildings when current baseline information becomes out-of-date (May 2025). Update surveys should be carried out every two years and will be focussed on the development Phase due to be brought forward within the following two years.

- For the existing roosts and for any additional roosts that may be identified in update surveys, a European Protected Species Mitigation Licence (EPSML) should be obtained from Natural England. The licence should be obtained prior to works commencing, and will allow for the destruction of bat roosts.

- Prior to the EPSML being obtained, update surveys should be carried out to characterise the roosts and identify any changes to the number of roosts, species, and number of individuals. Recent (3 months prior) survey information will be required as a part of the EPSML application.

- 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.

- A licenced ecologist should also be present to supervise the demolition of the buildings supporting bat roosts. The ecologist should initially fit exclusion devices to any potential access/egress points, which should be left in place for at least one week. The ecologist should then supervise the soft stripping of the roof/destruction of any potential roosts. Should a bat be found during the demolition, it will be safely moved by the ecologist to pre-erected bat boxes on Site.

- The demolition of structures supporting bat roosts should only be undertaken during the active bat season, and avoid the hibernation period (October – May inclusive).

7.5.19 In addition to the above, habitats proposed within the strategic landscaping areas will be beneficial to foraging and commuting bats. This includes hedgerows, lines of trees, broadleaved woodland and the permanently wet waterbodies. Creation of such habitats will provide varying vegetation structure and promote invertebrate populations, which will be beneficial to bat. Also, there will therefore be an overall increase in the amount and quality of foraging and commuting habitat.

7.5.20 Measures set out in the LEMP will ensure that establishment and management of these habitats will be beneficial to bats. For example, double-row planting of hedgerows will provide thicker and better-quality commuting habitat. Additionally, the Phasing Plan will ensure that foraging and commuting habitat will be lost gradually throughout construction, and foraging habitat within the strategic landscaping areas will be brought forward during the initial stages of development. These measures will mitigate against the loss and severance of bat foraging and commuting habitat.

7.5.21 To mitigate against the effect of light spill onto roosting, foraging and commuting habitat, a sensitive lighting scheme will be designed in consultation with an ecologist. This will focus on minimising spill onto sensitive habitats (woodland, hedgerows, tree lines) during both construction and operation of the proposed development. Where possible, dark corridors will be created to provide commuting opportunities. Temporary and permanent artificial lighting will be directed away from bat habitat and, bulbs that emit less ultra-violet lighting (metal halide or high-pressure sodium) will be used.

7.5.22 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.

7.5.23 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, ancient woodland 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.

<u>Breeding Birds</u>

7.5.24 To mitigate against the effects of habitat loss on breeding birds, habitat clearance will be undertaken outside of the nesting bird season (March – August inclusive). If this is not possible, a suitably qualified ecologist will perform nesting bird checks 24 hours prior to any habitat being removed to confirm the presence / absence of active nests.

7.5.25 Should any active nests be identified, a protective "no works" buffer will be established around the nest by the suitably qualified ecologist. The size of the buffer

is dependent on the sensitivity of the bird species, but will be a minimum of 5m in radius from the nest. The buffer will be left in place for a minimum of 21 days, or longer depending on the stage of the nest (e.g. eggs will require a buffer for longer than fledglings).

7.5.26 After this period, the ecologist will return to repeat the nesting bird checks to confirm the nesting attempt is complete and no active nests are present before the habitat can be cleared. All habitat will be cleared within 24 hours of the ecologist confirming no nests are present.

7.5.27 To mitigate against the loss of breeding habitat, 100 bird nesting boxes will be installed across the Site, within new buildings or the retained woodland / scattered trees. A combination of integral woodstone-style, tree mounted boxes will be used, the specification and location of which will be determined in consultation with an ecologist. Using a combination of boxes and designs (small-hole, open-fronted, sparrow terraces) will allow for a variety of species to utilise the nest boxes.

7.5.28 As with the bat boxes, bird nest boxes will be subject to maintenance every five years. This will take place outside of the nesting bird season, and will entail cleaning of old nest material and repairs / replacement of damaged boxes.

7.5.29 During the operational phase of the development, public pathways will be created throughout the green space. These formal paths will provide routes through the newly created and retained habitats, which will reduce the likelihood of residents walking into nesting bird habitat. However, the provision of pathways will not completely mitigate against the risk of residents straying from the paths.

7.5.30 Furthermore, with the creation of woodland, hedgerows, scattered trees, grassland and permanent waterbodies there will be an overall increase in the availability of nesting and foraging habitat for birds. The LEMP will detail native species for planting which will include a range of berry-bearing shrubs (e.g. hawthorn) and species that will promote invertebrate populations. The LEMP will also detail best management practices to promote these habitats for birds, for example annual (autumn) mowing and the removal of arisings. Also, the Phasing Plan for the development will ensure that suitable nesting bird habitat is retained for most species throughout the course of construction.

Invertebrates

7.5.31 The creation of hedgerows, woodland, permanent waterbodies and grassland will lead to an overall increase in invertebrate habitat, which will mitigate against the habitat loss required for construction. Furthermore, the Phasing Plan will mean that these habitats will be brought forward in the initial years of the development, before all the habitat due to be cleared for construction is lost. As such, suitable invertebrate habitat will be present throughout construction, mitigating against habitat loss and fragmentation.

7.5.32 As mentioned previously, habitat management and maintenance practices will be set out within a LEMP. These will ensure that impacts associated with recreational pressure in the operational phase of the development will not compromise the biodiversity value and integrity of the habitats, for example by removing litter. The provision of formal footpaths will reduce the likelihood of residents walking across invertebrate habitat, although it is still possible. Also, areas of species-rich grassland and wildflower meadows will be managed appropriately to promote species diversity (e.g. with an annual hay cut), thereby promoting invertebrate populations.

Great Crested Newt, and Badger

7.5.33 Although GCN, badger, otter and reptiles were assessed as being of Negligible importance, harm or disturbance to individuals should they be present would constitute a **Legal offence.** As such, mitigation is provided.

7.5.34 The CEMP will detail precautionary methods that will be implemented to mitigate against accidental harm to individuals or disturbance of habitat, including:

- A fingertip search for GCN of vegetation over 10cm high will be conducted by a suitably qualified ecologist. Tall vegetation (including hedgerows, tall grass etc) will be subject to an initial cut using hand tools (such as a strimmer or chainsaw), to a height suitable for fingertip searching.

- Cut vegetation will be removed away from the Site so as not to create areas of refugia suitable for GCN. Any suitable refugia (brash piles, logs) present on Site before development commences should be removed prior to works, and only outside of the GCN and reptile hibernation period (outside of October – February inclusive).

- Any shrubs or trees removed will be used to create refugia within retained woodland.

- Any excavations will be covered overnight, or left with a means of an escape (e.g. plank) for any GCN, badger, hedgehog that may become entrapped. Checks of all excavations for entrapped animals to be carried out each morning before works commence. Any pipework will also be covered to prevent entrapment.

- A pre-commencement check for badger will be undertaken approximately three months prior to works commencing on each phase of the development.

- A toolbox talk will be given to staff by the ECoW. This will cover wildlife legislation and the identification of GCN, reptile, badger and otter.

- In the event that GCN, reptile, badger are recorded on Site, all works in their vicinity should cease and advice should be sought from an ecologist.

7.5.34.1 In addition to the above, the habitats created within the strategic landscape areas will be of potential benefit to GCN and badger should they use the Site in the future.

7.5.34.2 Several areas of species-rich grassland and wildflower meadow are proposed across the Site, which will provide suitable foraging habitat for badger should they use the Site. Also, as the existing area of woodland is Ancient Woodland it is protected by a 15m buffer. As such, potential badger sett creation habitat will be protected from disturbances from the construction and operational phases of the development.

7.5.35 '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

7.5.35.1 Prior to the commencement of works, an updates invasive species walkover should be undertaken. This will confirm the presence or likely absence of Japanese knotweed or any other non-native invasive species.

7.5.35.2 Additionally, an invasive species specialist should be consulted prior to any works commencing within 8m of the historic stand of Japanese knotweed on the western boundary. This is in order to confirm that the stand continues to show no new growth and if any further remediation is necessary.

7.5.35.3 Any checks should be undertaken between April – September (inclusive), but ideally during mid-summer (June / July).

7.5.35.4 Subsequent to the update checks and consultation with a specialist, a non-native invasive species management plan will be completed. This will detail any remediation required and precautionary methods that will be implemented to mitigate against the risk of spreading Japanese knotweed, or any other non-native invasive species, across or away from the Site.

7.5.36 After implementation of this mitigation, the Site will be absent of non-native species and therefore mitigation within the operational phase of the development is not required. Should any non-native invasive species be recorded once in operation, for example by maintenance teams, an ecologist should be consulted and remediation will be required.

Residual Effects

7.5.37 Following the implementation of the mitigation detailed above, residual effects are not anticipated for the majority of receptors.

7.5.38 Residual effects include the displacement of breeding and wintering skylark and lapwing into surrounding agricultural land as a result of the complete loss of grassland and arable fields. The magnitude of this impact is difficult to quantify as the extent of displacement cannot be predicted with any scientific certainty.

7.5.38.1 The proposals will result in the total loss of breeding and foraging habitat for skylark and lapwing and which is assessed as being a **Major adverse residual** impact at a **Local** level. Confidence in this assessment is **High.**

7.5.39 The construction phase of the development is also anticipated to result in the temporary displacement of wintering passerine species of bird which rely on the existing habitats on Site. There is no mitigation available for this impact, therefore there will be a temporary **Minor adverse** impact at a **Local** level. Confidence in this assessment is **High.** Once the strategic landscape plantings have matured this impact will be **Neutral**.

7.5.40 Additionally, there will be a residual effect for disturbance to breeding birds through recreational pressure in the operational phase of the development. The will be a risk of residents straying from the formal pathways created and disturbing /destroying nests or damaging suitable nesting habitats. Additionally, domestic pets such as dogs or cats may predate on nesting birds and their nests. As such, there will be a residual **Minor adverse** impact at a **Local** level. Confidence in this assessment is High.

Cumulative Effects

7.5.41 This section will address the potential the proposed development may have to cause effects to ecological receptors through cumulative effects, in combination with other developments.

7.5.42 Developments which have already been built, or for which habitat clearance has commenced, are assumed to comprise part of the baseline and will not be considered further. Also, developments over 2 km from the Site have been excluded from the assessment.

7.5.43 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

7.5.44 This application is located directly adjacent to the Site to the north-east, and is for a residential development of 140 dwellings with associated landscaping, infrastructure and open space. This will require clearance of the majority of the Site, excluding sections of hedgerow and an oak tree.

7.5.45 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). Landscaping proposals include new hedgerows, trees, shrub planting, wildflower meadows and amenity grassland.

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

7.5.47 The Ecological Impact Assessment (EcIA) submitted with the application concluded that the proposed mitigation is sufficient to address all significant adverse effects associated with the development. Therefore, although the adjacent development is likely to result in cumulative impacts, these are thought to be **Negligible.** This is in line with the assessment in the previous ES Chapter.

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

7.5.48 This is an approved application which is located approximately 250m south-west of the Site and is for the linking of Capitol Close to Higham Lane. To allow for the new roundabout, some broadleaved plantation woodland, introduced shrub, dense scrub, a building (no bat roosts) and defunct hedgerows will be lost.

7.5.49 Within the Ecological Appraisal, recommendations for the replacement of lost woodland and hedgerows were made.

7.5.50 Given the scale of the proposed roundabout works and the recommendations for replacement planting, no cumulative effects are expected. This is in line with the previous ES Chapter.

Application Nº. 2019/0286: Hybrid planning application for an extension to Capitol Park comprising a) development of 2no warehouses (floorspace of 9,755m2 and 7,804m2) for

general industrial and storage and distribution purposes (use classes B2 and B8) with provision of ancillary office accommodation

7.5.51 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.

7.5.52 As the proposals will result in the total loss of arable land, cumulative impacts to lapwing and skylark are possible. However, these species were not recorded during surveys, and there are alternative farmland habitats within 100m of the development. As such, potential effects are considered minor.

7.5.53 Therefore, no cumulative effects are anticipated. This is in line with the previous ES Chapter.

Application Nº 2020/0028: Highways works comprising construction of new roundabout to create a road link into MU1 Local Plan allocation site and associated earthworks and alterations.

7.5.54 This application is for the construction of a new roundabout immediately adjacent to the Site to the south-west. Proposals will allow for the creation of a new roundabout to link the Site to Higham Common Road, and will include associated earthworks alterations to the existing road and the provision of footpaths and cycle paths.

7.5.55 Construction of the roundabout will require a loss of some broadleaved plantation woodland, amenity grassland and modified grassland. Although the modified grassland has the potential to support skylark and lapwing, only a small area will be lost. Given the small scale of the development, and that construction will commence prior to works on the Site beginning, no cumulative impacts are anticipated.

Application Nº 2021/1631: Erection of a new secondary school at land off Keresforth Close, Barnsley.

7.5.56 This application of for the erection of a new secondary school with associated sports block, sports pitches, hard and soft landscaping, access, parking and drainage, and is located approximately 1.3km to the south-east of the Site.

7.5.57 The development area supports a field of semi-improved grassland bordered by hedgerows, trees and scrub. To the north-east of the site is a former NHS facility with buildings, hedgerows, scrub and woodland.

7.5.58 The PEA report submitted with the application concludes it unlikely that there would be significant impacts relating to breeding birds and foraging bats. Several of the buildings that are due to be demolished were assessed as having potential to support roosting bats, as were some of the trees across the site.

7.5.59 No further reports, such as a bat roost survey report, are available. However, should bat roosts be present on the site, planning conditions will include obtaining a EPSM Licence and suitable mitigation for loss of roosts. As such, no cumulative impacts are anticipated. The previous ES Chapter did not assess this application.

Application Nº. 2021/1642: Residential development of 198 dwellings at Land off Smithywood Lane and Calver Close, Gilroyd, Barnsley

7.5.60 This application is located approximately 1.7km to the south of the Site, and is for the construction of 198 dwellings.

7.5.61 The development area comprises two improved grassland fields with non-native hedges, mature trees and fences comprising the boundaries. Although the development area has the potential to support breeding and wintering skylark and lapwing in the grassland fields, neither species were recorded during surveys. Also, significant assemblages of breeding bird were not anticipated, given the habitats and size of the site.

7.5.62 Therefore, no cumulative impacts are anticipated. This application was not considered within the previous ES Chapter.

Application Nº. 2022/0016: Residential development of 215 dwellings at land north of Keresforth Road, Dodworth, Barnsley.

7.5.63 This application is located approximately 400m to the south-west of the Site, on the other side of the M1 Motorway. The application is for a residential development of up to 215 dwellings and associated works.

7.5.64 The development area comprises amenity grassland, semi-improved grassland, marshy grassland, tall ruderal, scrub, broadleaved woodland and scattered trees, hedgerow, and a watercourse. The Site also supports Schedule 9 non-native invasive wall cotoneaster *Cotoneaster horizontalis.*

7.5.65 Although the site has the potential to support skylark and lapwing, neither species were recorded during survey. The Ecological Impact Assessment states that there is the potential for a minor adverse effect at the Site level for breeding brids, due to permanent loss of breeding habitat. However, this was thought to be dependent on the results of the forthcoming Breeding Bird Surveys, the report for which is not available.

7.5.66 A minor adverse effect at the Local level was also anticipated for trees, due to the proposed loss of two trees with veteranizing features.

7.5.67 This ES Chapter does not anticipate any residual effects to breeding birds through habitat loss or to trees. As such, no cumulative impacts are expected. This application was not considered within the previous ES Chapter.

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

7.5.68 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.

7.5.69 The development area is small in extent, and is mainly comprised of amenity grassland, with smaller areas of improved grassland, tall ruderal scattered trees and dense scrub. The scrub and areas of vegetation surrounding the roundabout

are to be retained under the proposals. A railway line also runs roughly east-west to the southern corner of the Site.

7.5.70 It is unlikely that the habitats on Site would support skylark and lapwing, hence no cumulative effects are anticipated for these species. Japanese knotweed is present, however as the development has planning permission, one of the planning conditions to discharge prior to commencement of the development will most certainly be the remediation of this non-native invasive plant. As such, no cumulative effects are anticipated here either.

7.5.71 Given the small extent of the development, plus the limited habitat available to support species, no cumulative effects are anticipated. This is in line with the previous assessment.

Application Nº 2019/1567. Highways work comprising construction of new roundabout to create a road link into MU1 Local Plan allocations site and associated alterations.

7.5.72 This application is for the creation of a new roundabout immediately to the north of the Site, on Barugh Green Road. This will serve to create a new roundabout linking the Site to Barugh Green Road, and will entail alterations to the existing road alignment and relocation of a grade II listed milepost.

Given the small extent of the development, plus the limited habitat available to support species, no cumulative effects are anticipated. This application was not considered within the previous assessment.

7.6 Summary

Table 7.1: Assessment Summary and Residual Ecological Effects

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Proposed Mitigation / Enhancement	Residual Significance of Effects
Denby Grange Colliery SAC; South Pennine Moors SAC; Peak District Moors / South Pennine Moors Phase 1 SPA.	Pollution Recreational Pressure Disturbance of Supported Species and Habitats	Temporary adverse, indirect and direct.	International	N/A	Negligible
Redbrook Pastures LWS	Recreational Pressure Pollution (fuel spill, water contamination, noise and light spill, dust) Encroachments onto RPA.	Temporary adverse, indirect and direct.	County	Avoid/minimise artificial light spill onto LWS. Protection measures outlined in CEMP and LEMP.	Negligible
Hugset Woods LWS	Pollution Disturbance effects	Temporary adverse, indirect.	County	Protection measures outlined in CEMP and LEMP.	Negligible
Daking Brook LWS; Silkstone Fall Wood LWS; Barnsley Canal at Wilthorpe LWS; Falthwaite and Lowe Wood LWS.	Pollution	Temporary indirect.	County	N/A	Negligible
Broad-leaved semi-natural woodland (including ancient woodland)	Habitat Loss Damage via compaction and dust deposition Pollution	Temporary minor adverse, indirect and direct.	Local	New woodland planting. Avoidance of artificial lighting of any retained habitat. Protection measures outlined in CEMP and LEMP.	Negligible
Dense and Scattered Scrub	Habitat Loss Damage via compaction and dust deposition Pollution	Temporary moderate adverse, indirect and direct.	Site	Recreation of habitat.	Negligible

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Proposed Mitigation / Enhancement	Residual Significance of Effects
Broad-leaved Scattered Trees	Total or Partial Loss Damage	Temporary minor adverse, direct.	Local	New tree planting. Avoidance of artificial lighting of any retained habitat. Protection measures outlined in CEMP and LEMP.	Negligible
Hedgerows	Partial Loss Damage to RPA Pollution (dog fouling, litter)	Temporary major adverse, direct.	District	Hedgerow translocation. New hedgerow planting. Avoidance of artificial lighting of any retained habitat. Protection measures outlined in CEMP and LEMP.	Negligible
Neutral Grassland	Partial Loss Physical damage Pollution (dog fouling, litter etc)	Temporary moderate adverse, direct.	District	Recreation of habitat.	Negligible
Standing Water	Pollution Recreational pressure	Temporary moderate adverse, direct.	Local – District	Recreation of habitat.	Negligible
Running Water	Sedimentation Pollution Habitat Loss	Temporary moderate adverse, indirect.	Local	Protection measures outlined in CEMP and LEMP.	Negligible
Bats	Killing / Injury Loss of roosts Loss of foraging, roosting and commuting habitat Cat predation	Permanent major adverse, direct to roosting bats. Permanent moderate adverse, direct to foraging and commuting bats.	Local	Provision of bat boxes with maintenance checks. Update bat roost surveys. EPSML licensing to remove roosts. Pre-works commencement check. Planting suitable foraging and commuting habitat outline in a LEMP. Sensitive lighting scheme.	Negligible

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Proposed Mitigation / Enhancement	Residual Significance of Effects
Breeding and Wintering Birds	Killing / injury Disturbance of Nesting Birds Habitat Loss	Temporary and permanent minor – major adverse to breeding birds.	Local	Vegetation / ground clearance timed outside of nesting bird period or preceded by nest check. Provision of bird boxes and favourable habitat, detailed in a LEMP.	Minor adverse at the Local level. Long term neutral. Major adverse to breeding skylark and lapwing.
Invertebrates	Habitat Loss Disturbance during construction Dog fouling	Permanent major adverse.	Local		Negligible
Hedgehog	Killing / injury Disturbance of Hibernating/ Nesting Hedgehogs Habitat Loss		Site	Habitat management and maintenance outlined in a LEMP.	Negligible
Amphibians including Great Crested Newts	Killing / Injury Habitat Loss	Temporary direct minor adverse.	Legal Protections only (Precautionary)	Precautionary measures outlined in a CEMP.	Negligible
Otter	Killing / Injury Commuting habitat disturbance	Permanent indirect and temporary direct minor adverse.	Legal Protections only (Precautionary)	Precautionary measures outlined in a CEMP.	Negligible
Reptiles	Killing / Injury Habitat Loss	Temporary direct minor adverse.	Legal Protections only (Precautionary	Precautionary measures outlined in a CEMP.	Negligible
Badger	Killing / Injury	Temporary direct minor adverse.	Legal Protections only (Precautionary)	Precautionary measures outlined in a CEMP. Pre-commencement check for badgers.	Negligible

Ecological Receptor	Potential Impact	Nature of Impact	Sensitivity of Receptor	Proposed Mitigation / Enhancement	Residual Significance of Effects
Non-native Invasive Species	Spread of Non-native Invasive Species	Permanent minor adverse.	Legal Protections only (Precautionary)	Pre-works commencement walkover. Consultation of invasive species specialist. Precautionary measures outlined in a CEMP.	Negligible

7.7 References

- Barnsley Metropolitan Brough Council. (2019) *Barnsley's Local Plan*. [online] Available at https://www.barnsley.gov.uk/services/planning-and-buildings/local-planning-and-development/our-local-plan/barnsleys-local-plan/, Accessed May 2021.

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- WYG (2020a) *Barnsley West: Factual Great Crested Newt eDNA Survey Report*

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- WYG (2020c) *Barnsley West: Factual Breeding Bird Survey Report*

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