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Dewsbury Riverside Gateway Development

Ecological Impact Assessment

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Glossary

Term	Definition
BNG	Biodiversity Net Gain
CBD	Convention on Biological Diversity
CIEEM	Chartered Institute for Ecology and Environmental Management
CIRIA	Construction Industry Research and Information Association
CPP	Construction Phase Plan
CRoW Act	Countryside and Rights of Way Act 2000
CWS	County Wildlife Site
DEFRA	Department for the Environment, Food and Rural Affairs
EA	Environment Agency
EC	European Council
EcIA	Ecological Impact Assessment
EPS	European Protected Species
ES	Environmental Statement
EU	European Union
FCS	Favourable Conservation Status
HPI	Habitat of Principal Importance
HSI	Habitat Suitability Index
IEMA	Institute of Environmental Management and Assessment
ILP	Institute of Lighting Professionals
JNCC	Joint Nature Conservation Committee
LEMP	Landscape and Ecology Management Plan
LVIA	Landscape and Visual Impact Assessment
MAGIC	Multi-Agency Geographical Information for the Countryside
NERC Act	Natural Environment and Rural Communities Act 2006
NNR	National Nature Reserves
NPPF	National Planning and Policy Framework
OMHPDL	Open Mosaic Habitat on Previously Developed Land (Priority Habitat Type)
PEA	Preliminary Ecological Appraisal
PPG	Planning Policy Guidance
SAC	Special Areas of Conservation
SIP	Natural England Site Improvement Plan for Natura 200 sites
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest
UKCP18	UK Climate Projections 2018
WCA	Wildlife and Countryside Act 1981 (as amended)
WMS	Working Methods Statement
ZoI	Zone of Influence

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1 Summary

1.1 Introduction

This Ecological Impact Assessment (EcIA) has been prepared for Barton Willmore on behalf of Kirklees Council in support of the planning application for the residential development at the first phase of development at Dewsbury Riverside situated within the Metropolitan Borough of Kirklees, in West Yorkshire, England (hereafter referred to as 'the Proposed Development' or 'Dewsbury Riverside').

An assessment of the effects of the proposed development on the terrestrial ecology of the site and the surrounding area has been undertaken. The proposed development is assessed against the current baseline conditions as they were in April 2021. The assessment is based on ecological desk studies and an extended Phase 1 habitat survey and species specific Phase 2 surveys carried out between April and September 2021.

The site comprises predominantly agricultural land consisting of cereal crop. A large extent of broad-leaved woodland is located to the west of the site, which is a priority habitat. Allotments and a Mosque are located to the north eastern corner of the site. Connectivity across the site is considered to be poor with occasional species poor hedgerow and minimal field margins. The site sits within the 'Pennine Foothills' Biodiversity Opportunity Zone' which sets out specific objectives that should be targeted for protection and enhancement of habitats and species within the zone.

Species specific surveys identified low bat and badger activity that was concentrated around the woodland. The breeding bird assemblage is considered to be of District value and comprises a range of farmland, woodland and generalist species.

1.2 Construction and Operational Impacts

The potential impacts of the Proposed Development are assessed for both construction and operational periods and are based on the description of the proposals and the associated figures, particularly the Green Infrastructure and Land Use Parameters Plan. These incorporate integral avoidance, minimisation and mitigation impacts determined and agreed throughout the scoping, assessment and design process.

No impacts to Natura 2000 sites are predicted. In the absence of mitigation, impacts relate to habitat loss, dust and disturbance through human activity, noise and lighting to identified ecological receptors, namely Local Nature Reserves and Wildlife Sites, broadleaved woodland, bats and breeding birds.

1.3 Mitigation and Biodiversity Net Gain

The parameters plans allow for approximately 18.8ha of GI within the Proposed Development, which includes the woodland areas. During the design process, the biodiversity metric 2.0 was used to assess impacts to habitats and to explore options as to how the proposals could retain, enhance and create habitats on site to deliver a net gain. Habitats that are listed within the Pennine Foothills Biodiversity Opportunity Zone were selected, including semi-natural grasslands, scrub and orchards. A native hedgerow, of approximately 500m, is proposed along the southern boundary connecting up to the plantation and woodland to the west. This will provide a green link to the wider habitat, thus improving connectivity. This is in line with local planning policy and the objectives of the Pennine Foothills Biodiversity Opportunity Zone.

There are extensive areas of SuDs that will be incorporated into the green infrastructure design. Whilst the detailed drawings are not required for the outline application, it does set out the parameters for detailed development

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proposals, which will provide for the SuDs being ecologically designed, including semi-natural grassland, scrub and trees around the periphery and ponds or wetland areas where the topography and hydrology allow., In line with the Kirklees guidance, the calculations within the metric are relatively conservative in terms of the actual net gain that the SuDs could delivered during the detailed design stage.

In addition, there are opportunities to improve and enhance the condition and management of the woodland - a priority habitat and also listed within the Pennine Foothills Zone - and the plantation on-site. These enhancements will achieve a significant proportion of net gain for the site. The commitment to deliver these enhancements can be provided within a Woodland Management Plan and wider Management Plan (LEMP), which will set out measures to ensure the habitats are appropriately managed to maximise their benefits to biodiversity. This would deliver a 11.64% net gain in habitats and a 33.60% net gain in hedgerows.

Additional measures include installation of a range of bat and bird boxes across the new units; sensitive lighting strategy to ensure a dark corridor is maintained across the site, a Construction Environment Management Plan (CEMP) to ensure sensitive site clearance.

1.4 Residual effects

One minor significant residual effect is considered likely from the proposed development:

- Minor adverse effect on breeding birds – specifically ground nesting farmland birds, namely skylark

The Proposed Development will deliver a significant amount of green infrastructure that, not only will deliver a net gain in biodiversity but will also improve connectivity across the landscape. The GI strategy is in line with local planning policy and will meet the objectives set out in the Pennine Foothills Biodiversity Opportunity Zone, providing enhancements for a number of targeted species.

Hence, whilst it is acknowledged that the loss of intensively farmed arable land will result in a minor adverse effect on the ground nesting birds that utilise this habitat, it is considered that there will be a beneficial effect for other bird species, such as woodland specialists and those that have a close association with residential housing, school and including species of conservation concern such as swift, house sparrow and starling.

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2 Introduction

This Ecological Impact Assessment (EcIA) has been prepared for Barton Willmore on behalf of Kirklees Council in support of the planning application for the residential development for the first phase of development at Dewsbury Riverside situated within the Metropolitan Borough of Kirklees, in West Yorkshire, England (hereafter referred to as 'the Proposed Development' or 'Dewsbury Riverside'). This assessment will evaluate the likely effects of the Proposed Development on the surrounding terrestrial ecology.

This report describes the methods used to assess the effects; the baseline conditions currently existing at the site and surrounding area; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been adopted.

The ecological baseline presented in this report is based on extended Phase 1 habitat surveys of the site, protected species surveys for badgers, bats and breeding birds, and a desk study of biological records for the site and in the surrounding area. From these, important ecological features (e.g. sites, species and habitats) have been identified. The ecology survey reports are available in Appendices A.

Potential impacts and effects have subsequently been assessed for each important ecological feature identified within the Zone of Influence (ZoI).

2.1 Site Context

The Proposed Development site ('The Site') is located approximately 2km to the south-west of Dewsbury Town Centre and forms part of the north-western part of the Dewsbury Riverside housing allocation. The Site extends to circa 29ha and currently comprises mostly agricultural land with 7ha of broadleaved woodland and plantation to the west. An allotment and a Mosque are located to the north eastern corner of the site. The Site boundary is illustrated in Figure 2-1.

The site is bordered by Ravensthorpe Road to the north, along which are a row of residential properties. Beyond Ravensthorpe Road lies the Huddersfield main railway line, with the River Calder located further north again from the railway. To the south and west lies open agricultural land, currently under an arable regime at the time of the survey. Ravensthorpe School and further residential properties are present along Ouzelwell Lane to the east.

Whilst the site is located within close proximity a number of large towns and industrial centres, there is open countryside to the south and west, the majority of which is agricultural farmland, with larger areas of broadleaved woodland. The site sits with the Yorkshire Southern Pennine Fringe National Character Area (NCA), which '*…is a transitional landscape from the upland areas of the Southern Pennines NCA in the west through to the low-lying land of the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA to the east. The most striking aspect of the landscape is the mingling of predominantly 'gritstone' industrial towns and villages with the strong valley forms and pastoral agriculture of the Pennine foothills'*

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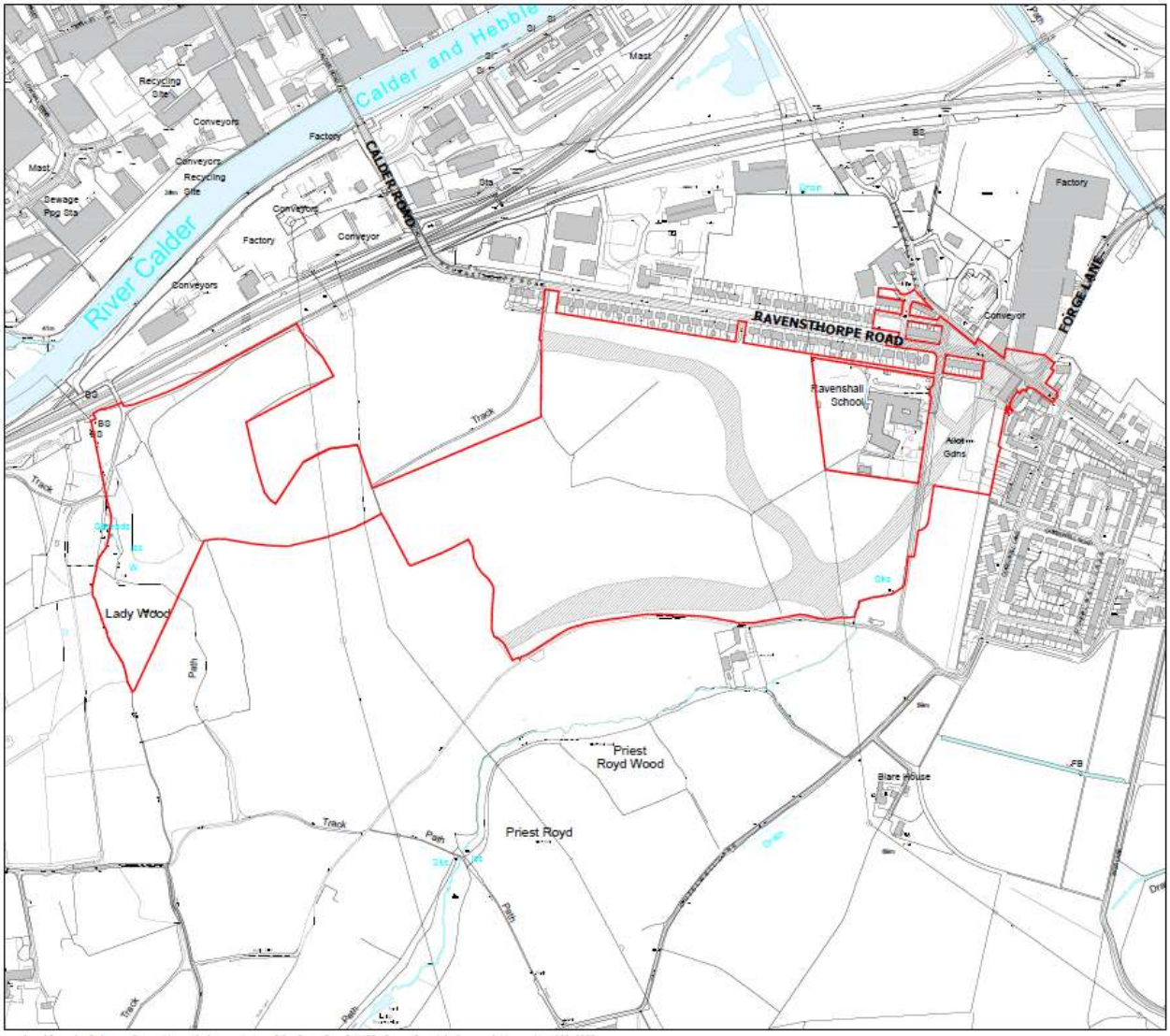

Figure 2-1 Site Location Plan (17.08.21, Barton Willmore)

2.2 Development proposals

The Proposed Development is a Hybrid Application comprising:

a) Application for full planning permission for engineering works, drainage and utilities connection for the provision of site access from Forge Lane and Ravensthorpe Road and associated works; and,

b) Application for outline planning permission for the erection of up to 350 dwellings and mixed-use development (including community facilities) with associated works including the provision of internal estate roads and parking, landscape works (including provision of public open space, tree clearance/replacement/woodland management and ecological management) and sustainable urban drainage works drainage principles.

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3 Planning Policy and Legislation

The following legislation and policy is relevant to, and has had an influence on, the assessment or mitigation proposed in the impact assessment:

3.1 International legislation, agreements and conventions

3.1.1 United Nations Convention on Biological Diversity 1992

The UN Convention on Biological Diversity (CBD) focuses on the conservation of all species and ecosystems. It requires the development of national strategies, plans or programmes for the conservation and sustainable use of biodiversity. The 'UK Post-2010 Biodiversity Framework' (JNCC *et al.,* 2012), is the result of a change in strategic thinking following the publication of the CBD's 'Strategic Plan for Biodiversity 2011–2020' (CBD, 2010).

Biodiversity 2020: A strategy for England's wildlife and ecosystem services' (DEFRA, 2011) underpins the UK Post-2010 Biodiversity Framework. Relevant key targets include:

- No net loss of priority habitats and an increase in the overall extent of priority habitats; and
- Overall improvement in the status of our wildlife and prevention of further human-induced extinctions of known threatened species.

European Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora (the Habitats Directive) (European Council, 1992) requires Member States to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest (i.e. those listed in Annexes I, II, IV and/or V of the Directive).

Member States are also required to contribute to a coherent European ecological network of protected sites by designating SACs for the natural habitat types listed in Annex I and habitats of the species listed in Annex II.

The Directive specifically relates to Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites, collectively known as Natura 2000 sites. In England, the Directive is implemented through the Conservation of Habitats and Species Regulations 2017 (discussed in national legislation section).

3.2 National legislation

3.2.1 Conservation of Habitats and Species Regulations 2017

The Habitat Regulations transpose the EU Habitats Directive and EU Birds Directive in the UK and provide for the designation and protection of European sites and the protection of European protected species (EPS). For those animal species listed in Schedule 2, it is an offence to deliberately capture, kill, or disturb/take/destroy the eggs of an EPS. Additionally, it is an offence to damage or destroy a breeding site or resting place of an EPS.

It is also an offence under the Habitat Regulations to deliberately pick, collect, cut, uproot or destroy a wild plant listed in Schedule 5. However, these actions can be made lawful through the granting of licences by the appropriate authorities (Natural England (NE) in England) where deemed appropriate.

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3.2.2 Wildlife & Countryside Act 1981 (as amended)

The Wildlife & Countryside Act (WCA) is the principle mechanism for the legislative protection of wildlife in Great Britain and provides for the designation, protection and management of Site of Special Scientifc Interest, SSSI. and for the establishment of National Nature Reserves (NNRs) in England and Wales for their flora, fauna or geological interests.

Under the Act, it is an offence to:

> *"Intentionally kill, injure or take any wild animal listed on Schedule 5; intentionally or recklessly damage, destroy or obstruct access to any structure or place used by a Schedule 5 species for shelter or protection; or to disturb them while using such a place".*

The WCA also provides for the legal protection of wild birds. All nesting birds, including their nests, eggs and young, are protected from killing, injury, taking or selling with additional protection offered to species listed on Schedule 1. For these species, adult birds and their young are protected from intentional or reckless disturbance while at or near the nest. It is an offence to intentionally pick, uproot or destroy any wild plant included in Schedule 8.

The Act is also the principal mechanism for preventing the spread of non-native plant and animal species listed under Schedule 9, such as Japanese knotweed, which may be detrimental to native wildlife.

3.2.3 Countryside and Rights of Way Act 2000

The Countryside and Rights of Way Act (CRoW) Act amended and strengthened the protection given to certain species under the WCA and introduced the offence of "reckless" actions with regards to these species to the Act.

3.2.4 Natural Environment & Rural Communities (NERC) Act 2006

Section 40 of the NERC Act 2006 places a duty on all public authorities in England to have regard, in the exercise of their functions, to the purpose of conserving biodiversity. A list of Habitats and Species of Principal Importance (HPI and SPI) in England, drawn up under Section 41 (S.41), is used to guide local and regional authorities in implementing their biodiversity duty.

3.2.5 Protection of Badgers Act 1992

The Protection of Badgers Act makes it an offence to kill, injure or take a badger, or to damage or interfere with a sett unless a licence is obtained from NE.

3.3 National planning policy and guidance

3.3.1 National Planning Policy Framework (MHCLG) 2021

The revised National Planning Policy Framework (NPPF), updated in February 2019 and revised July 2021, sets out the Government's planning policies for England and how these should be applied. The revised NPPF continues to stress the importance of the local authority contribution to improving and protecting the environment through development of a systematic approach to enhancing biodiversity, minimising waste and pollution, and mitigation/adaptation to climate change impacts.

Chapter 15 requires that local planning authorities, when considering planning applications, should aim to conserve and enhance biodiversity. This is underpinned by Planning Practice Guidance 2014 (MHCLG, revised 2019) which suggests:

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- The NPPF is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution;
- Biodiversity enhancement in and around development should be led by a local understanding of ecological networks, and should seek to include habitat restoration, re-creation and expansion; improved links between existing sites; buffering of existing important sites; new biodiversity features within development; and securing management for long term enhancement. New or improved habitat needs to be located where it can best contribute to local, national and international biodiversity restoration.;
- Where a development cannot satisfy the requirements of the 'mitigation hierarchy', planning permission should be refused as per paragraph 180 of the NPPF; and
- Sufficient green infrastructure should be designed into a development to make the proposal sustainable. High-quality networks of multifunctional green infrastructure contribute a range of benefits, including ecological connectivity, facilitating biodiversity net gain and nature recovery networks and opportunities for communities to undertake conservation work.

3.3.2 Planning Practice Guidance 2014 (MHCLG), updated 2018

Planning Practice Guidance (PPG) states that:

- "The NPPF is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution";
- "Biodiversity enhancement in and around development should be led by a local understanding of ecological networks, and should seek to include habitat restoration, re-creation and expansion; improved links between existing sites; buffering of existing important sites; new biodiversity features within development; and securing management for long term enhancement.";
- "Where a development cannot satisfy the requirements of the 'mitigation hierarchy', planning permission should be refused as per paragraph 118 of the NPPF."; and
- "Sufficient green infrastructure should be designed into a development to make the proposal sustainable. If this green infrastructure helps to mitigate any significant harm to biodiversity (among other benefits) then this should be considered in deciding whether compensation may also be needed."

3.3.3 Office of the Deputy Prime Minister Circular 06/2005 (ODPM) 2005

This circular provides further guidance with regards to statutory obligations relating to biodiversity within the planning system. It sets out the considerations to be considered when planning decisions may have a significant effect on protected sites and species.

3.3.4 Draft Planning Practice Guidance (Draft PPG) 2018

The draft PPG states that "planning policies and decisions should be based on up-to-date information about the natural environment and other characteristics of the area and together with Local Nature Partnerships, where appropriate, this should include an assessment of existing and potential components of ecological networks."

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3.3.5 Hedgerows Regulation 1997

The Hedgerows Regulations (HM Government, 1997) make it an offence to remove or destroy certain hedgerows without the permission of the local planning authority.

3.4 Regional and local planning policy and guidance

3.4.1 Kirklees Local Plan 2013 - 2031

The Kirklees Local Plan was adopted on 27 February 2019. The Local Plan is now the statutory development plan for Kirklees and has superseded the Kirklees Unitary Development Plan. Planning applications should be determined in accordance with the development plan. Key to the plan is the requirement that future development in Kirklees is guided by decisions which aim to protect and enhance the integrity of the natural environment. Biodiversity plays a role in the development of policy:

- Policy LP24 sets out good design principles including those that secure high quality and green developments. The policy states '*Development can support biodiversity and connect to ecological networks by including street trees, vegetation and through the use of Sustainable Drainage System'*.
- Policy LP28 sets out the requirements for Sustainable Drainage Systems and states within the policy justification that SuDs should contribute to green infrastructure and provide biodiversity benefits wherever practicable.
- Policy LP30 *Biodiversity and Geodiversity* sets out measures to protect and enhance the biodiversity and geodiversity of Kirklees. The policy states: that 'development proposals will be required to:-

    (i) result in no significant loss or harm to biodiversity in Kirklees through avoidance, adequate mitigation or, as a last resort, compensatory measures secured through the establishment of a legally binding agreement;

    (ii) minimise impact on biodiversity and provide net biodiversity gains through good design by incorporating biodiversity enhancements and habitat creation where opportunities exist;

    (iii) safeguard and enhance the function and connectivity of the Kirklees Wildlife Habitat Network at a local and wider landscape-scale unless the loss of the site and its functional role within the network can be fully maintained or compensated for in the long term;

    (iv) establish additional ecological links to the Kirklees Wildlife Habitat Network where opportunities exist; and

    (v) incorporate biodiversity enhancement measures to reflect the priority habitats and species identified for the relevant Kirklees Biodiversity Opportunity Zone.
- Policy LP30 of the Kirklees Local Plan also requires development proposals to '*provide net biodiversity gains through good design by incorporating biodiversity enhancements and habitat creation'*.
- Policy LP31 highlights the requirements for green infrastructure, which highlights the requirement to protect, support and enhance biodiversity by creating well-connected habitat

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3.4.2 Kirklees Council – Biodiversity Net Gain Technical Advice Note

Kirklees Council have prepared a technical note that sets out how Biodiversity Net Gain (BNG) will be delivered through development. In summary, the guidance states that '*developments will be expected to deliver a measurable biodiversity net gain. At this time, in the absence of legislation, a minimum of 10% net gain in biodiversity is required. A net gain of 10% is the proportion of increase proposed by central government, following the introduction of the Environment Bill. The change in biodiversity value will be calculated and demonstrated using the Biodiversity Metric 2.0 and must apply to both baseline habitat and linear feature units on the site'*

3.4.3 Pennine Foothills and Urban Biodiversity Opportunity Zone

As stated in the above policies, developments should seek to incorporate enhancement measures to reflect the priority habitats and species within the Biodiversity Opportunity Zone in which they sit. The Development Site is located between of the '*The Pennine Foothills*' and '*Urban'*. The Pennine Foothills zone is characterised by gently rolling countryside with a mix of woodland (some ancient woodland sites), hedgerows and agricultural land – primarily pasture (mostly agriculturally improved) but with some arable cropping. Both Lowland Deciduous Woodland and Hedgerows are UK Habitats of Principal Importance and the latter especially are widely distributed across the non-urban areas. Arable Field Margins, another UK Habitat of Principal Importance, is also present.

Within this zone there are opportunities to improve:

- connectivity of the lattice network of semi- natural corridors within the farmed landscape. This is especially relevant to woodland edge species and linking woodlands and hedgerows; and
- The agricultural land bordering these habitats (field margins) is an especially important component of the hedgerow and woodland habitat mosaic for a range of priority species (ie replicates the woodland edge interface in both cases). However, much of this land is agriculturally improved and hence, of poor quality and, many hedgerows managed inappropriately for biodiversity benefit.

There are further objectives/opportunities to:

- Protect, restore and enhance network of hedgerows.
- Protect, restore and expand areas of woodland, especially adjacent to ancient woodland sites.
- Enhance the ecological network of habitats, considering opportunities offered by gardens and Public Open Space in new developments

The Urban Opportunity Zone acknowledges there is fragmentation of habitats but there are opportunities to:

- Restore the ecological networks and their functionality by creating an urban habitat (ribbon type) network
- Exploit opportunities for enhancement through the planning system, including those involving SuDS and floodplain habitats.
- Exploit other opportunities for enhancement, especially community-based mechanisms.
- Establish the role of formal areas such as gardens and parks and enhance their role in improving the functionality of the ecological network

In addition to the above, a table representing each Biodiversity Opportunity Zone has been produced that sets out Habitats and Species of Principal Importance that may occur within each zone, together with specific information for species where a Kirklees Species Action Plan is available. Habitats relevant to the Development Site includes arable field margins, hedgerows, deciduous woodland, orchards, other semi-natural grassland and scrub. Priority species that

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may be present within these habitats include skylark, linnet, dunnock, yellowhammer, house sparrow, grey partridge, bullfinch, starling, song thrush, brown hare, great crested newt, hedgehog, toad and bats.

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4 Methodology and Assessment Criteria

This assessment of potential impacts and effects on ecology has been undertaken in line with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (2018).

4.1 The study area

The 'development area' includes all land within the site boundary, as illustrated by the red line boundary in Figure 2.1. In this section, and throughout this report, 'the site' refers to the site to which the proposed development relates.

The ecological desk study included a search for records of protected species, habitats and species of principal importance, and sites designated for nature conservation, within the site and within a 2km buffer of the wider landownership development site.

The zone of influence (ZoI) for ecology is defined as the 'area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities' (CIEEM, 2018). The ZoI may extend beyond the site boundary and is dependent on the receptor's sensitivity to environmental change, how mobile a receptor is, and whether there are any hydrological or airborne links between planned activities and the features.

4.2 Baseline study methodology

A brief summary of the methodology for collecting baseline data is provided in this section. Further details are provided in the Phase I habitat survey, breeding bird, badger and bat survey reports provided in Appendix A.

4.2.1 Current and assessment baseline

Ecological baseline conditions are those existing in the absence of the proposed activities associated with the proposed development. The assessment baseline may differ from the existing (or current) baseline at the time of collecting the ecological data as conditions on the site may change and/or other developments located in the surrounding area may materially affect the assessment baseline.

The assessment baseline is defined by the conditions on the site and in the surrounding area as they are at the date of writing this report.

4.2.2 Desk study

A desk study was carried out using a combination of externally commissioned data records, internet-based sources of information and referring to reports of previous ecological surveys undertaken on or near to the site. This included examining aerial photographs to assist in understanding the local context of the site, in particular, to identify connectivity with surrounding habitats.

Internationally protected sites and statutory sites were obtained for 10km from the site and records for and non-statutory designated sites and protected species within 2km of the site as well as records for ancient woodland and Habitats of Principal Importance (HPIs) within 2km of the site were identified using the following sources:

- Multi-Agency Geographical Information for the Countryside (MAGIC) website;
- West Yorkshire Ecology Service.

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In addition, an existing Ecological Survey Report (AECOM, Nov 2016) was reviewed. This report include habitat and species specific surveys undertaken in 2015 & 2016 on land that partially overlaps with the application boundary for this Proposed Development.

4.2.3 Field survey

An extended Phase 1 habitat survey was conducted on the wider landownership boundary in April 2021 by Penny Anderson Associates (PAA) following the methodology set out by the Joint Nature Conservation Committee (JNCC, 2010) and Institute of Environment Assessment (IEA, 1995) to identify habitats present and immediately adjacent to the site as well as the potential for, or presence of, species or habitats which are afforded legal protection or are of conservation concern. The habitats present on site are shown in Figure 5-1.

The site was also assessed for habitat quality and suitability for commuting and foraging bats In line with published guidance (Collins 2016). A single building is located to the north eastern corner of the site. An assessment of the potential of the building to support bats was undertaken from accessible viewpoints.

All methods and assessment criteria were consistent with current good practice guideline for each survey type and the surveyors were competent for the assigned tasks based on the CIEEM competency framework (CIEEM 2017)

The extended Phase I Habitat Survey identified the need for further Phase 2 species surveys that included bat activity surveys, badger and breeding birds. The detailed reports are provided in Appendix A.

4.2.4 Assessment approach

4.2.4.1 Importance of ecological features

Under CIEEM guidelines (2018), ecological receptors (or features) are referred to in terms of their value, rather than their sensitivity. The relative value of ecological features, established through the desk study and extended Phase 1 habitat survey are based on the following geographic scale:

- International;
- National (Uk/England);
- Regional (North);
- County/Metropolitan (West Yorkshire);
- Local (Kirklees District); and
- Site (negligible).

Designated sites have already been assessed for their nature conservation value. For example, sites important at the European level include those designated as Special Areas of Conservation (SACs) which are protected under the Conservation of Habitats and Species Regulations 2017 and sites important at the national level include those designated as Sites of Special Scientific Interest (SSSIs) under the Wildlife and Countryside Act 1981 (as amended). Examples of designated sites that are of importance at a county level include Local Nature Reserves (LNR) or Local Wildlife Sites (LWS).

Some habitats and species located outside of designated sites also have a geographic frame of reference which has been used as an objective starting point for identifying their importance such as those:

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- Considered to be priorities for conservation in England and Wales;
- Listed as habitats and species of principal importance under the Natural Environment and Rural Communities Act 2006 (NERC); and/or
- Listed as being of local importance in local Biodiversity Action Plans (BAPs).

However, the final value of habitats and species outside of designated sites has been determined by considering a number of additional criteria, for example local rarity, diversity, or function as a habitat corridor, such as identified as a priority habitat within the biodiversity opportunity zone (CIEEM 2018, based on Ratcliffe 1977).

4.2.4.2 Scope of the assessment

Following the baseline evaluation of the importance of ecological features described above, only those assessed as being of local or higher importance are considered within the impact assessment, along with all legally protected species in order to ensure statutory compliance.

Likewise, the impact assessment only considers the potentially 'significant' effects of the development on ecology and nature conservation (CIEEM, 2018). Impacts on important ecological features are considered during both the construction and operational phases of the development.

4.2.4.3 Assessment of significant effects

The assessment of likely significant effects presents an assessment for all ecological features that have been scoped in because they are of nature conservation importance or are legally protected and there is a reasonable potential for there to be a significant effect.

At this stage, the assessment considers the impacts and effects of the development and incorporating embedded mitigation/best practice construction methods, but without the implementation of supplementary mitigation measures.

4.2.4.4 Mitigation measures and assessment of residual effects

Where a potential effect exists, supplementary mitigation measure are provided. An assessment of the significance of any residual effects after mitigation is then made.

4.2.4.5 Characterising ecological impacts

Impacts on ecological features (adverse or beneficial) can be direct or indirect. These have been characterised based on the following parameters set out in the CIEEM guidelines:

- Extent (the spatial or geographical area over which the impact may occur);
- Magnitude (size, amount, intensity or volume of the impact);
- Duration (defined in absolute terms and where relevant in relation to the species/habitat being assessed i.e. a species lifecycle or the period over which habitat succession may occur);
- Reversibility (based on whether recovery is likely within a reasonable timeframe); and
- Frequency and timing (the number of times the impact is repeated and whether the timing of an impact coincides with important seasons or life cycle stages).

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4.2.4.6 Determining significance

The following definitions are used for the terms 'impact' and 'effect' (CIEEM, 2018):

- Impact – Actions resulting in changes to an ecological feature. For example, the construction activities of a development resulting in removal of a hedgerow; and
- Effect – Outcome to an ecological feature from an impact. For example, the effects on a dormouse population from the loss of a hedgerow.

Effects can be significant at a wide range of geographical scales. CIEEM defines a significant effect to be:

> *'an effect that either supports or undermines biodiversity conservation objectives for important ecological features or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity).*

Ecologically significant effects include impacts on the integrity of a designated site or the conservation status of a habitat or species within a given geographical area. If an impact is not likely to have an adverse or beneficial effect on the conservation status of a species or habitat or stop recovering species or habitats from reaching favourable conservation status, then it is not considered to be a significant effect.

For species, conservation status is determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area. The known distribution, abundance and likely trends and variations in population size are considered.

Conservation status of natural habitats is the sum of influences acting on a natural habitat, and its typical species, that may affect its long-term natural distribution, structure and functions, as well as the long-term survival of its typical species within a given geographical area.

This chapter determines significance at geographical scales in accordance with the CIEEM 2018 guidelines. The significance of effect is also considered as being negligible, minor, moderate or major. Moderate and major effects are considered to be significant at the geographical level specified in this assessment. Minor or negligible effects are considered not significant.

4.3 Biodiversity Net Gain

The Biodiversity Net Gain Metric 2.0 (Natural England, December 2019) has been used to calculate losses and gains resulting from a proposed development, or other land use changes. As set out in the Kirklees Biodiversity Net Gain technical note, the development should deliver a 10% net gain in biodiversity. It is acknowledged that the Metric 3.0 has recently been produced but this assessment has continued with Metric 2.0 as this has been used to inform the design process which began before the release of Metric 3.0. This assessment provides a summary of the net gain calculations, with the detailed process provided in the accompanying Biodiversity Net Gain Report.

4.4 Assessment limitations and assumptions

Species data collected during the desk study is mainly derived from records submitted by members of the public and previous surveys undertaken by professional consultants and volunteers not associated with the proposed development. Therefore, it should not be taken as a definitive list of the protected species that may occur in the local area.

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Whilst April can be a sub-optimal time of year conduct habitat assessments, it was considered that the survey was sufficient to classify the habitats present.

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5 Baseline Ecological Conditions

5.1 Current baseline (2021)

The evaluation of the ecological baseline condition is based on the desk study and Phase I Habitat Survey

5.1.1 Designated sites

5.1.1.1 European and National Statutory Designated Sites (Natura 2000)

There are no statutory designated sites within the site or 5km of the site boundary. The closest site is the Denby Grange Colliery Ponds Special Area of Conservation, SAC, which is selected for its high population of great crested newts, which lies 6.5km to the southeast. The other SACs and SPAs present within Kirklees Council lie over 16km for the Site. Therefore, no impacts are predicted on Natura 2000 Statutory Sites as a result of the proposals and hence are not considered further within this assessment.

5.1.1.2 National Statutory Designated Sites

The underlying component Site of Special Scientific Interest, SSSI unit for the aforementioned SAC is the Denby Grange Colliery SSSI. The Development Site lies outside of the risk zone for this SSSI and hence no impacts to this site are predicted. No other SSSI lie within 5km of the Site. There are two Local Nature Reserves (LNR) within 2km of the site. Lower Spen Wildlife Area 960m to the north of the site, which comprises a mosaic of habitats and a diverse range of flora and invertebrate species and Sparrow Wood (LNR) 1,200m to the northeast, which is a small area of woodland supporting '*wildlife and flora*'. Both LNR are open to the public and are located within an urban context and are easily accessible.

Local Nature Reserves can be selected by Local Authorities and are often locally important for wildlife or geology or for educational and public enjoyment purposes. The sites are therefore considered to be of Local value.

5.1.1.3 Non-statutory designated sites

Four non-statutory designated sites were identified within 1km of the site, all of which are Local Wildlife Sites (LWS). A description of these sites can be found within **Error! Reference source not found.**. There are no non-statutory designated sites within the site boundary. Local Wildlife Sites are areas of land considered to be of substantive biodiversity conservation importance and are therefore of County value. This importance may relate to presence of rare or vulnerable habitats and species, or its value as connecting or buffer habitats. Whilst they are not offered direct legislative protection, they are covered by Policy PL30 *Biodiversity and Geodiversity.*

Table 5-1 Non-statutory designated sites located within 1km of the proposed development

Non-statutory designated site	Designation	Description (reason for designation)	Proximity to the proposed development in metres (at its closest point)
Jordan Wood and Oliver Wood	LWS	The western half of this site is replanted ancient woodland. With canopy layer is an even mix of beech, sycamore and sessile oak with smaller areas of silver birch. The shrub layer consists of holly, elder and yew. The ground flora is dominated by bluebell, but also supports other woodland species including dog's mercury, pignut, creeping soft-grass, male fern, yellow archangel, wood anemone, lords and ladies, wood avens and lesser celandine.	840m southwest

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Whitley Wood	LWS	Replanted ancient woodland site that supports predominantly deciduous woodland with beech, sycamore and sessile oak being the dominant canopy species. In the central western area is a small patch of mixed woodland with larch and Corsican pine adding to the canopy. The ground flora supports areas of abundant native bluebell.	865m southwest
Sparrow Wood	LWS (and LNR)	Ancient woodland, mature and veteran trees, native bluebell coverage, parkland and wood pasture. Within 05ha of a qualifying woodland.	1,200 northeast
Howroyd Beck	LWS	Howroyd Beck is an area of unmanaged acid grassland with a gentle slope to a block of lowland mixed deciduous woodland	1,600m south

5.1.2 Habitats

5.1.2.1 Habitats of Principal Importance

The desk study identified several parcels of Habitats of Principal Importance (priority habitats) within 2km of the site, a summary is provided in Table 5-2. Habitats of note include:

- Deciduous woodland which is found within and adjacent to the site.
- Open Mosaic Habitats 250m to the northeast and 300m to the west.
- Ancient Woodland forming part of Oliver Wood LWS 840m to the southwest

Table 5-2 Summary table of Habitats of Principal Importance within 2km of the site

Priority Habitat Name	Total Area (ha)	Approx. distance to site of closest habitat parcel (km)	Number of parcels
Deciduous Woodland	130	Within redline	188
Open Mosaic Habitats	22.52	0.25	15
Traditional Orchard	0.35	1.47	1

5.1.2.2 Protected and priority habitats and species

Numerous records for protected and priority species were returned from the data search within a 2km radius of the site. Species records occurring post-2010 are presented in Table 5-3.

No protected species records were returned within the site boundary however, four Schedule 1 listed birds have been recorded in the wider area including barn owl, fieldfare, kingfisher and redwing.

A number of bat species records were returned within 2km of the site. This included a single record for Nathusius's pipistrelle *Pipistrellus nathusii*, within 572m of the site and Leisler's bats.

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Table 5-3 Protected and notable species within 2km of the site

Species	Common Name	Species Name	Status	Distance of most recent record (	No. of records	Date of nearest record
Bird	House Sparrow	*Passer domesticus*	BoCC:Red; UKBAP; WYBAP; Kirklees BAP	818	61	2016
	Willow Warbler	*Phylloscopus trochilus*	BoCC:Amber	1,039	2	2016
	Kestrel	*Falco tinnunculus*	BoCC:Amber; WYBAP; Kirklees BAP	1,429	3	2012
	Swallow	*Hirundo rustica*	WYBAP; Kirklees BAP	1,542	2	2011
	Dunnock	*Prunella modularis*	BoCC:Amber; UKBAP; WYBAP; Kirklees BAP	1,176	2	2016
	Bullfinch	*Pyrrhula pyrrhula*	BoCC:Amber; UKBAP; WYBAP; Kirklees BAP	1,176	3	2016
	Song Thrush	*Turdus philomelos*	BoCC:Red; UKBAP; WYBAP; Kirklees BAP	1,176	3	2016
	Meadow Pipit	*Anthus pratensis*	BoCC:Amber	1,176	20	2015
	Goldfinch	*Carduelis carduelis*	Kirklees BAP	1,176	10	2016
Bat roost	Pipistrelle	*Pipistrellus pipistrellus*	Sch5; WYBAP; Kirklees BAP	815	18	2016
	Bats	*Vespertilionidae*	Sch5	1,297	1	2012
	Leisler's Bat	*Nyctalus leisleri*	Sch5; WYBAP; Kirklees BAP	1,758	1	2014
	Natterer's Bat	*Myotis nattereri*	Sch5; WYBAP; Kirklees BAP	1,810	1	2013
	Noctule	*Nyctalus noctula*	Sch5; UKBAP; WYBAP; Kirklees BAP		1	2016
Bat activity	Brown Long-Eared Bat	*Plecotus auritus*	Sch5; UKBAP; WYBAP; Kirklees BAP	1,176	2	2016
	Leisler's Bat	*Nyctalus leisleri*	Sch5; WYBAP; Kirklees BAP	815	4	2016
	Nathusius' Pipistrelle	*Pipistrellus nathusii*	Sch5; WYBAP; Kirklees BAP	1,176	1	2016
	Noctule	*Nyctalus noctula*	Sch5; UKBAP; WYBAP; Kirklees BAP	815	10	2016
	Pipistrelle	*Pipistrellus pipistrellus*	Sch5; WYBAP; Kirklees BAP	1,176	75	2016
	Serotine	*Eptesicus serotinus*	Sch5; Kirklees BAP	1,176	1	2016
	Soprano Pipistrelle	*Pipistrellus pygmaeus*	Sch5; UKBAP; WYBAP; Kirklees BAP	1,810	2	2013
	Unidentified Bat	*Myotis sp*	Sch5	1,176	3	2016

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Species	Common Name	Species Name	Status	Distance of most recent record (	No. of records	Date of nearest record
Mammals	Otter	*Lutra lutra*	Sch5; UKBAP; WYBAP; Kirklees BAP	510	1	2019
	Hedgehog	*Erinaceus europaeus*	UKBAP; WYBAP; Kirklees BAP	1,176	1	2016
Amphibian	Common Toad	*Bufo bufo*	Sch5_sect9.5b; UKBAP; WYBAP; Kirklees BAP	1,128	2	2013
	Smooth Newt	*Triturus vulgaris*	Sch5_sect9.5b; WYBAP	1,360	3	2011
	Common Frog	*Rana temporaria*	Sch5_sect9.5b; WYBAP	1,979	5	2019
Fish	Eel	*Anguilla anguilla*	UKBAP; WYBAP; Kirklees BAP	1,769	2	2015
	Sea Trout	*Salmo trutta*	UKBAP; WYBAP; Kirklees BAP	1,769	2	2015
Invertebrate	Horsetail Weevil	*Grypus equiseti*	Notable:B	1,445	1	N/A
	Oedostethus quadripustulatus	*Oedostethus quadripustulatus*	Notable:A	1,445	1	N/A
	Tropiphorus obtusus	*Tropiphorus obtusus*	Notable:A	1,445	1	N/A

5.1.3 Additional Survey Data

AECOM surveyed an area of land, 8.72ha, to the north of the Proposed Development site in 2015 & 2016, although there is some overlap of the survey area that extends into the red line area for this application. The surveys concluded that the site was of low ecological value and was not deemed important for any protected or notable species. Only low bat activity was recorded, predominately of common pipistrelle. The site was considered to be of low value to birds due to the lack of suitable habitat.

5.1.4 Habitats on site

As illustrated by Figure 5-1 the Phase 1 habitat survey identified that the site is dominated by arable land, predominately under a cereal crop. Other habitat types include:

- Broadleaved woodland – Semi-natural
- Broadleaved woodland – Plantation
- Semi-improved neutral grassland
- Poor semi-improved grassland
- Amenity grassland

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- Scrub
- Tall ruderal
- Bracken (Continuous)
- Arable
- Allotments
- Running water
- Hedgerows – species poor
- Introduced scrub – offsite within the school grounds
- Scattered trees – offsite within the school grounds
- Wall, buildings and hardstanding

No notable plant species were observed within the site during the survey. Several notable species have been recorded within the search area, and although most were at a distance from the site, hoary cinquefoil *Potentilla argentea* was recorded previously adjacent to the southern boundary and dittander *Lepidium latifolium* 330m south of the site.

The distribution of all terrestrial habitats recorded during the extended Phase 1 habitat survey is shown in Figure 5-1 and summarised in Table 5-4, which also determines the importance of each for nature conservation.

Table 5-4 Habitats on present within the wider landownership area and within 30m of this boundary

Habitat	Likely importance	Description and justification
Broad leaved woodland – Semi-natural	Local	Semi-natural broadleaved woodland comprising pedunculate oak dominated habitat with sycamore, ash, silver birch. A mixed-age canopy, some trees having been coppiced in the past, with good regeneration of hawthorn and ash saplings in the understory. Bluebell was abundant in the ground flora, with frequent creeping soft-grass, frequent to abundant bramble and occasional patches of ramsons, lesser celandine and ivy. Other species present included occasional wood avens and common nettle. At the south-west of the site was a large patch of Himalayan balsam and a smaller patch elsewhere within the woodland. The woodland was used for recreation by walkers and bicycle users. There was fallen deadwood within the woodland, but a lack of standing deadwood. Considered to meet the criteria of mixed deciduous woodland and hence is a Habitat of Principle Importance (HPI) listed in Section 41 of the NERC Act. This habitat is also listed with the Pennine Foothills Biodiversity Opportunity Zone. There are extensive blocks of this priority woodland habitat across the es area, although this woodland is considered to be somewhat isolated from the woodlands to the south. Hence is of Local value.
Broad-leaved woodland – Plantation	Site	Towards the western tip was a 'C' shaped section of young broadleaved plantation woodland. It was densely planted in rows and was evenly aged (c.12 years old) with a canopy height of c.6m. A variety of species had been planted mostly in blocks so that species were frequent in sections, such as silver birch, pedunculate oak and field maple. Towards the edges of the

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Habitat	Likely importance	Description and justification
		plantation were a small number of semi-mature and mature trees, comprising ash and sycamore. It lacked a subcanopy, although hawthorn and blackthorn were locally frequent in places. The ground flora was very sparse, apart from at the plantation edges and the south-eastern tip where there was a lower density of planting. Common nettle and bramble were locally frequent. Himalayan balsam was rare in the north-western tip. The majority of the woodland floor comprised bare ground and leaf litter. Once more established and under correct management, this area of woodland will be of at least Local value but it is currently considered to be of site importance only.
Semi-improved and improved grassland	Site	A narrow strip of semi-improved grassland was present along the north-western boundary between the edge of the plantation woodland and a track. It was unmanaged with a sward height of approximately 25cm. Common bent was the most abundantly occurring grass species, with frequent cock's-foot. Herb species were limited, with ribwort plantain occasional to frequent and most other herbs occurring only occasionally, such as white clover, creeping thistle and common ragwort. Less diverse grassland is present only the edges of the fields and is dominated by course grasses and nettle. These habitats are locally abundant and small in area; therefore, are considered to be of site importance.
Scrub	Site	At the south-east corner of the site bordering the stream was dense bramble scrub with occasional hawthorn and immature trees. There was an old, coppiced field maple near the bend in the stream. Patches of bramble-dominated scrub occurred frequently in the field margins and verges across the site, with other species including cleavers, false oat-grass and rosebay willowherb. A small patch of blackthorn scrub was present in the margin at the south with dog's mercury the ground flora beneath. Scattered scrub of occasional elder and hawthorn bushes were also present in the margin. These habitats are widespread and abundant and whilst scrub is listed as within the Pennine Foothills Biodiversity Opportunity Zone, it is small in size and relatively unconnected. Therefore, it is considered to be site importance only.
Running water	Site	A narrow stream flowed along the edge of the scrub/tree patch at the south-eastern corner of the site – on the site boundary. The channel was narrow, c.0.5m wide, and the water shallow, c.2cm deep. Dense bramble covered the banks, which lacked potential to support water vole (*Arvicola amphibius*). Within the semi-natural broadleaved woodland at the west of the site was a narrow stream c.0.75m wide at the maximum width. The depth of the channel was shallow, with flowing water c.1cm deep at time of survey. The stream was also considered to offer no potential for water vole. The streams lack floral diversity and offered limited potential for protected species, although may offer some connectivity whilst holding water/damp. This habitat is considered to be of site importance only.
Tall ruderal	Negligible	Common nettle-dominated tall ruderal vegetation with abundant cleavers was present in an opening between the plantation and semi-natural

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Habitat	Likely importance	Description and justification
		woodland at the north-west of the site, with a patch of abundant Himalayan balsam at the north. These habitats are locally abundant and small in area; therefore, are considered to be of negligible value.
Bracken – continuous	Site	Dense bracken was present on the edge of the field to the south-west of the site. Bluebell, a Schedule 8 plant species, was abundant amongst the bracken in one of the margins, with scattered pedunculate oak saplings. These habitats are locally abundant and small in area but given the abundance of bluebell, are considered to be of site importance.
Arable	Site	The arable fields had crops of oats in the eastern fields and barley in the western fields, with ploughed soil at the far west. The fields are intensively managed and no arable field margins were present. The habitats are considered to be of site value only, although will provide habitat for certain species of ground nesting farmland birds.
Allotments	Site	Well utilised allotments with a range of horticultural practices supporting a range of species.
Hedgerows	Site	Three hedgerows occurred bordering arable fields within the central section of the site. Hedge H1 was dominated by elder and varied between 1m and 2m tall. It was defunct, with large gaps between sections of the hedge. The hedge base comprised a mosaic of poor semi-improved grassland and dense scrub, although dog's mercury was occasional to frequent. Hedge H2 was dominated by hawthorn with some non-native species rarely present (Franchet's cotoneaster). It was intact and approximately 2.5m tall. It also had a base of predominately poor semi-improved grassland and dense scrub, with common nettle occasional to frequent and cleavers occasional. A ditch was present on the northern side, which was damp in places. Hedge H3 was similar to hedge H2, being a similar size, dominated by hawthorn and there was a ditch on the north-western side. One mature standard pedunculate oak was present. The hedgerows onsite were species poor with limited connectivity, hence are considered to be of site importance only.
Scattered Trees	Local	Within the school grounds there were lines of planted semi-mature Swedish whitebeam and immature silver birch. Across the site there were occasional mature, semi-mature and immature trees, predominantly in the field margins. Species present included pedunculate oak and ash, with wych elm, Turkey oak and sycamore occurring rarely. Two mature ash trees with owl boxes installed on them lay adjacent to the allotments at the east of the site.
Running water	Site	A narrow stream flowed along the edge of the scrub/tree patch at the south-eastern corner of the site. The channel was narrow, c.0.5m wide, and the water shallow, c.2cm deep. Dense bramble covered the banks, which lacked potential to support water vole. Within the semi-natural broadleaved woodland at the west of the site was a narrow stream c.0.75m wide at the maximum width. The depth of the channel was shallow, with flowing water c.1cm deep at time of survey. The stream was also considered to offer no potential for water vole
Amenity grassland	Negligible	*Off-site*: Amenity grassland (football pitch) was present in the western part of the school grounds; this grassland had been recently mown. The area was fenced and was viewed from the arable field nearby. Another small area of playground amenity grassland was present at the north-eastern corner of the site. Again, the area was not accessible and was viewed from close by.

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Habitat	Likely importance	Description and justification
Introduced Scrub	Negligible	*Off-site*: There was a very small section of introduced shrubs at the edge of the car park in the school grounds.
Buildings/ Hardstanding / Wall	Negligible	*Off-site*: There were several buildings concentrated at the east of the site, with surrounding hardstanding: a school and associated buildings, with a small area of garden containing ornamental planting, and a nursery at the north-east corner. The buildings could only be viewed from outside the grounds, but all appeared intact and lacked features suitable for roosting bats. The adjacent roads were tarmacked. There were a number of sheds within the allotments, some in a state of dilapidation. Drystone walling, in varying condition ranging from intact to derelict, formed much of the site boundary next to the arable fields to the west. There was also a section of wall along the site boundary within the woodland at the far west of the site, and a short section of wall next to the path over the railway.

5.1.4.1 Invasive Non-Native Plants

There was one Schedule 9 WCA, 1981 (as amended) invasive non-native plant species present within the site - Himalayan balsam. A large patch occupied the ground flora beneath the semi-natural broadleaved woodland at the south-west corner, with a smaller patch further into the woodland. A dense stand of Himalayan balsam c.2m x 10m was present at the edge of the woodland, encroaching into the surrounding common nettle dominated tall ruderal vegetation, and Himalayan balsam also occurring rarely in the north-western tip of the plantation woodland nearby.

In addition, a dense stand of Japanese knotweed was present just outside the western boundary of the site.

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Figure 5-1 Phase 1 habitat survey map

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5.1.5 Protected and priority species and species groups

5.1.5.1 Species scoped out of further Survey or Assessment

The following species were considered to be absent from site or unlikely to be impact upon by the Proposed Development.

Amphibians

The desk study did not return any records for great crested newts. In addition, a search for available online records from eDNA surveys and European Protected Species licence returns did not identify any records within 3km of the site. There are no ponds within the site boundary. Following a review of online sources, two ponds were identified approximately 480m to the southwest and 490m to the south. A large waterbody is present to the north, but the railway line is considered to be a significant barrier to dispersal. The extensive arable fields and limited field margins and hedgerow network are considered to offer limited foraging opportunities and shelter for great crested newts and hence, no further survey or assessment is required, and the species has been scoped out of the assessment.

Hazel dormouse

The desk study returned no records of hazel dormouse presence within 2km of the site. Whilst the broadleaved woodland may offer potential habitat for dormice, the majority of the site lacks suitable habitat and there is limited connectivity to the wider landscape. As direct impacts to the woodland will be avoided, further surveys for dormice are not considered necessary.

Reptiles

The desk study did not return any records for reptiles. As with the amphibians, the extensive arable fields and limited field margins and hedgerow network are considered to offer limited foraging opportunities and shelter for reptiles and hence, no further survey or assessment is required, and the species has been scoped out of the assessment.

Bats – Roosting

The trees within the woodland were not assessed in detail for their potential to support roosts as no direct impacts to the woodland are predicted. The Masjid Abu Bakr Mosque and Lees Hall Playgroup is proposed for demolition to facilitate the construction of the access road. At this stage, an assessment of the potential of the building was undertaken from accessible viewpoints. In addition, a detailed condition survey had been undertaken on the property in March 2020 which provides a significant amount of information on the condition of the building.

The building is located directly on the Lees Hall Road and comprises a two-storey section to the front constructed of brick and stone with a shallow pitched concrete tile roof. There are two single storey extensions to the rear that are predominately rendered with a flat roof. The condition survey confirms that the building is generally in a fair condition with moderate cracking (<5mm) on sections of the roof. In addition, the building is located on a well-lit road with street lighting each side to the front of the property. There is limited connectivity to habitats, hence further reducing the suitability of the building, and it is considered unlikely to offer significant opportunities for roosting bats.

Therefore, presence/absence surveys were not considered necessary to inform this assessment.

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5.1.5.2 Species Specific Surveys

The Phase 1 habitat survey identified potential for badgers, commuting/foraging bats and breeding birds on site and hence detailed phase 2 surveys have been undertaken for these species. Description of the species identified during the ecological surveys and the nature conservation importance of the populations of these species within the site boundary is provided in the following sections. A full description of survey methods and results are provided in Appendices A.

5.1.5.3 Bats

Bats - Foraging and commuting

The habitats on site were assessed as having low suitability for commuting and foraging bats during the extended Phase I habitat survey. In line with best practice guidance (Colins, 2016), three surveys were subsequently undertaken, one during each active season (Spring, Summer and Autumn).

As such, the surveys are still on-going at the time of preparing this report. The results of the spring (May) and summer (June – August) surveys have recorded only low levels of bat activity dominated by common pipistrelle that predominantly used the southern boundary and woodland edge for foraging. Very limited activity was recorded across the rest of the site. Occasional noctule and *Myotis* species were also identified.

Whilst a detailed assessment cannot as yet be undertaken until the autumn surveys have been completed, the spring and summer results suggest the majority site is of low importance to bats, although the woodland and woodland edge do provide foraging opportunities. Given the level of common pipistrelle activity, it is probable that roosts are present in close proximity to the site within the surrounding residential housing that back onto the adjacent fields offering a dark and route to the woodland.

The large open arable fields offer limited potential for bats, with the monoculture of crops and lack of field margins limiting the availability of food sources. The silage fields may support a slightly more diverse range of invertebrates but are not considered optimum habitat for bats. The fields lack hedgerows which can provide both foraging and a sheltered flight route to the surrounding landscape.

Whilst the importance of the woodland and edge habitat should not be disregarded, the activity to date is restricted to the woodland and dominated by common pipistrelle, a widespread and common species across the UK. Therefore, the site is considered to be of Local value to bats.

5.1.5.4 Badger

No records for badgers *Meles meles* were returned as part of the data search within 250m of the site, with the nearest record greater than 1km from the boundary. The extended Phase I habitat survey identified low level activity and hence a detailed badger survey was undertaken to identify possible setts and activity levels across the site.

Four badger setts (all between 2-4 entrances) were recorded within western woodland compartment. Two were active and two currently considered inactive. The results suggest that a large active main sett is present off-site and that the setts are likely outliers associated with this off-site sett.

In addition, a single active sett was identified off-site, but just within 30m of the site boundary on the southeast edge amongst the scrub.

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Activity was low across the site and restricted to the woodland, woodland edge and off-site scrub. Badgers are known to be common and widespread but receive protection under UK legislation due to persecution rather than for rarity of the species. Depending on the crops, the arable land may provide some foraging opportunities, together with the residential gardens and allotments.

It is considered that the badger population is of Site importance only.

5.1.5.5 Birds

A total of 42 species were recorded on-site or within the immediate surrounds:

- 11 species were confirmed as breeding on site
- 20 species were probable breeders
- 8 species were possible breeders

Species' composition of the site is broadly as expected for open farmland with fields under cereal production and silage, as well as mature woodland and younger plantation. The assemblage comprises species that are typical of these habitats, including a number of farmland specialists such as common linnet, grey partridge, Eurasian skylark and yellowhammer and also woodland specialists such as spotted flycatcher, all are red listed species that are recognised as being in decline due to habitat loss. The close association of residential housing, school and industry introduces additional species of conservation concern such as swift, house sparrow and starling, all species that are more generally associated with human dwellings/buildings for nest sites. Starlings often travel long distances between nest sites and foraging areas and the proximity of extensive grassland areas and housing provide ideal breeding conditions. These species adapt well to, or are tolerant of, urban and suburban development and suitable mitigation to maintain or enhance local breeding populations can readily be provided for these species.

Of the 42 species recorded, 17 (40%) are in general decline and listed as Red or Amber Birds of Conservation Concern (BoCC, date). The detailed Breeding Bird Report in Appendix A summarises the conservations status of the bird species recorded.

The red listed species are European herring gull, house sparrow, common linnet, grey partridge, song thrush, Eurasian skylark, starling, mistle thrush, spotted flycatcher and yellowhammer.

Grey partridge, Eurasian skylark, starling, song thrush and yellowhammer are confirmed breeders and common linnet and spotted flycatcher are probable breeding species. House sparrow is categorised as a possible breeder but is most likely to be breeding within the houses and residential gardens immediately adjacent to the site.

The Amber listed species are, Eurasian bullfinch, kestrel, dunnock, stock dove, willow warbler and swift. Of these, willow warbler is the only confirmed breeder; dunnock, European bullfinch and kestrel are probable breeders and stock dove is a possible breeder.

Barn swallow, swift and European herring gull are non-breeding species, using the habitats on site to feed.

Common linnet, house sparrow, starling, song thrush, Eurasian skylark, spotted flycatcher, yellowhammer, dunnock and European bullfinch are also S41 species of the NERC Act. None of the birds found breeding at the site are listed on Schedule 1 of the WCA 1981.

Fuller provides a method for assessing the ornithological interest of a site whereby its value, in terms of local, county, regional or national importance is defined by the number of breeding species present. Whilst this scale has been

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amended over the years to take into account population changes and evaluation processes, it is still an effective method to assess the value of a site.

The following scale provides the framework on which the ornithological value of the site was assessed.

- National >85 species
- Regional 70-84 species
- County 50-69 species
- District 25-49 species
- Local <25 species

The combined total of confirmed and probable breeding birds found at the site was 31 with a further eight possible breeders. The bird assemblage, therefore, is considered to be of District importance.

5.2 Summary of identified Features and their Importance

A list of the features within the ZoI and therefore scoped into the assessment, and the level of importance attributed to each, is provided in Table 5-4. Those with negligible or site level importance, or which have been identified as unlikely to be significantly impacted by the proposed development, are excluded from further assessment (CIEEM, 2018).

Table 5-5 Identified features and their importance to be included within the assessment

Receptor	Importance	Justification
Lower Spen Wildlife Area and Sparrow Wood LNR	County	Local Nature Reserves and Local Wildlife Sites are areas of land considered to be of substantive biodiversity conservation importance and are therefore of County value. This importance may relate to presence of rare or vulnerable habitats and species, or its value as connecting or buffer habitats. For LNR it maybe that that offer educational and enjoyment of the natural environment. Whilst LWS are not offered direct legislative protection, they are covered by Policy PL30 *Biodiversity and Geodiversity*.
Jordan Wood and Oliver Wood LWS; Sparrow Wood LWS, Whitley Wood and Howroyd Beck	County	
Habitats		
Broadleaved woodland	Local	Considered to meet the criteria of mixed deciduous woodland and hence is a Habitat of Principle Importance (HPI) listed in Section 41 of the NERC Act. This habitat is also listed with the Pennine Foothills Biodiversity Opportunity Zone. There are extensive blocks of this priority woodland habitat across the es area, although this woodland is considered to be somewhat isolated from the woodlands to the south. Hence is of Local value
Species		
Bats	Local	This woodland and woodland edge provide foraging and commuting habitat for bats, in particular common pipistrelle which may be roosting within the adjacent residential properties. The wider arable fields are considered to be low importance/negligible value for foraging bats.

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Receptor	Importance	Justification
Breeding Birds	District	The combined total of confirmed and probable breeding birds found at the site was 31 with a further eight possible breeders. The bird assemblage, therefore, is considered to be of District importance in line with the Fuller Classification.

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6 Construction and Operational Effects

6.1 Potential effects of the development and their significance

6.1.1 Avoidance, minimisation and mitigation measures

The potential impacts of the Proposed Development are assessed for both construction and operational periods and are based on the description of the proposals and the associated figures, particularly the Green Infrastructure and Land Use Parameters Plan (Barton Willmore 32147 Ai15 & Ai16 Rev B Dated 17.8.21). These incorporate integral avoidance, minimisation and mitigation impacts determined and agreed throughout the scoping, assessment and design process.

Whilst the proposals will result in the loss of arable fields and other low value habitats, there is an extensive area of green infrastructure proposed, which includes the retention of the broadleaved woodland and plantation. This will also include Sustainable Drainage Systems that have been designed to offer opportunities for biodiversity and to aid in the delivery of biodiversity net gain on site as well as improving connectivity across this. Habitat types and species have been selected with consideration to the Pennine Foothill Biodiversity Opportunity Zone objectives and to achieve a net gain in biodiversity.

As the application is outline, detailed designs have not been prepared and as such are not currently considered 'inbuilt', but the parameter plans set out extensive areas of green infrastructure, which will incorporate the habitat types set out within the Biodiversity Net Gain metric (para 6.2.1). This includes the preparation of a Woodland Management Plan and a wider Landscape and Ecological Management plan to ensure the delivery of the habitat enhancement and on-going appropriate management. Specific details are provided in Supplementary Mitigation Section.

6.1.1.1 Construction

It is anticipated that the following construction activities are relevant to ecological considerations:

- Clearance of the site prior to works, including vegetation clearance;
- Ground works for installation of services and infrastructure;
- Construction of new buildings, hardstanding and associated infrastructure and Sustainable Drainage Systems (SuDs);
- Green infrastructure - tree planting and landscaping within the scheme; and
- Disturbance - construction lighting and plant/vehicle noise, vibration, movement and general activity.

6.1.1.2 Operation

It is anticipated that the following operational activities are relevant to ecological considerations:

- Increased human activity, noise levels and lighting; and
- Recreational pressure.

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6.1.2 Statutory and Non-Statutory Sites - Local Nature Reserves and Local Wildlife Sites

6.1.2.1 Construction

The designated sites set out in Table 5-5 are considered to be of sufficient distance away from the site that no impacts are predicted during construction. As such, there are no predicted significant negative effects on designated sites during construction.

6.1.2.2 Operation

The additional 350 residential units could result in an increase in visitors using the protected sites, which could impact on the habitats for which the sites were selected. However, the provision of 18.8ha of green infrastructure on-site, which includes the broadleaved woodland, will be readily available and easily accessible for the residents. It is considered this will meet the day-to-day recreational requirements of the majority of residents and hence should alleviate the pressure on other publicly accessible open spaces within the locality. In addition, a number of the designated sites are managed to encourage connectivity with nature and to ensure visitors act responsibly, whilst minimising potential disturbance impacts.

As such, taking the above into account, there are not anticipated to be any significant effects on the designated sites as a result of the operational phase of the Proposed Development.

6.1.3 Habitats – Broadleaved Woodland

6.1.3.1 Construction

There will be no direct loss to the broadleaved woodland onsite and the habitat has been incorporated into the wider GI parameters plan. Best practice construction measures should be adopted to minimise dust and airborne pollutants, which will be set out in a Construction Environment Management Plan (CEMP).

In the absence of mitigation, there could be a minor adverse effect to the broadleaved woodland during the construction phase of the Proposed Development due to dust and airborne pollutants.

6.1.3.2 Operation

It is likely that there would be an increase in use of the broadleaved woodland that, in the absence of mitigation, could result damage or destruction to the habitats. This could result in a moderate adverse effect on this priority habitat at the Local level.

6.1.4 Species - Bats

6.1.4.1 Construction

Whilst the arable fields and hedgerows will be lost as a result of the Proposed Development, the GI parameters plan ensures the retention of the semi-natural woodland and plantation. The majority of the bat activity to date has been recorded along the woodland edge and southern boundary of the site.

Best practice construction methods should be adopted, which will be set out in a CEMP. This will include either no nighttime working, or where night working is necessary, it will not result in any light spill across the woodland, plantation or retained boundary features.

The extensive areas of proposed GI, including SuDs will offer habitat for commuting and foraging bats, in particular to common pipistrelle which accounts for the majority of bat activity on site.

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It is considered there will be no significant adverse effect on the bat population as a result of the construction phase of the Proposed Development. The GI may provide additional foraging and commuting opportunities for bats and will improve connectivity to the wider landscape, potentially resulting in a positive effect for the local bat population.

6.1.4.2 Operation

The operational phase of the development will result in an increase in lighting which, if incorrectly positioned and installed, could result in excessive light spill across boundary features, or throughout the proposed GI, that may be used by bats. This could prevent bats from moving across the landscape and would result in a minor adverse effect at the Local level.

6.1.5 Species - Breeding Birds

6.1.5.1 Construction

The construction phase will result in the loss of habitat and hence a permanent loss of territories for certain species. Vegetation removal during the breeding season would result in the direct loss of nests and young. In addition, site clearance and construction activities would result in increased noise over a number of years. Noise levels can affect the ability of birds to hold territories and successfully breed. Whilst noise impacts will be temporary, they could affect the breeding in the medium term for a number of years for birds with shorter cycles.

A large majority of bird records were present around the woodland, plantation and edge habitats. These habitats will be retained.

However, it is acknowledged that the predicted loss of 17ha of arable land will result in the loss of habitat for species, such as the skylark that are a ground nesting farmland specialist. Two or three skylark territories/nest sites were likely to be present within the fields. Whilst there are extensive areas of arable land to the south and west of the site, this loss is considered to result in a moderate adverse effect at the District level on the breeding bird population, in particular skylark.

6.1.5.2 Operation

An increase in human presence can affect the behaviour of a number of bird species, which can affect their breeding success. In the absence of mitigation, recreational disturbance could lead to further loss of habitats that would result in a moderate adverse effect at the District level.

6.1.6 Summary of effects during construction and operation

The potential effects identified above are summarised in Table 6-1

Table 6-1 Summary of effects during construction and operation

Ecological feature	Importance	Description of effects	Effect significance
Local Nature Reserves and Local Wildlife Sites	Construction	Airborne dust, pollutants	Negligible
	Operational	Recreational Pressure	Negligible
Habitats – Broadleaved woodland	Construction	Airborne dust, pollutants	Minor adverse, temporary

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Ecological feature	Importance	Description of effects	Effect significance
	Operation	Recreational Pressure	Moderate adverse, permanent
Bats	Operation	Lighting	Minor adverse, permanent
Breeding Birds	Construction	Habitat loss, disturbance	Moderate adverse, permeant
	Operation	Disturbance	Moderate adverse, permeant

6.2 Supplementary mitigation measures

The following section sets out the proposed mitigation for likely adverse effects identified in the previous section as well as those measures which will deliver positive effects and ensure that relevant statutory requirements are met. It also sets out the biodiversity net gain calculations that can be delivered within the GI parameter plan.

6.2.1 Habitat loss

The proposed development will result in the loss of 17ha of arable land and 0.9ha of allotments, together with small areas of semi-improved grassland, scrub and tall ruderal vegetation. In addition, it has been assumed that all 0.44ha of species poor hedgerows will also be lost.

The design ensures that impacts to high quality habitat, or the habitat that has the potential to be enhanced- such as the plantation - will be avoided and retained within the development. This includes the broadleaved woodland and plantation, together with the majority of the boundary features with the exception of sections that will be removed to facilitate the construction of the access road.

The parameters plans allow for approximately 18.8ha of GI within the Proposed Development, which includes the woodland areas. During the design process, the biodiversity metric 2.0 was used to assess impacts to habitats and to explore options as to how the proposals could retain, enhance and create habitats on site to deliver a net gain. As stated within the Kirklees Biodiversity Net Gain guidance note, at outline, where a detailed design has not been prepared, a worst case scenario should be provided. Therefore, no habitat types have been selected that are highlighted within the metric as having a high degree of difficulty of creation or a protracted 'time to target condition'.

Habitats that are listed within the Pennine Foothills Biodiversity Opportunity Zone were selected, including semi-natural grasslands, scrub and orchards. A native hedgerow, of approximately 500m, is proposed, including along the southern boundary connecting up to the plantation and woodland to the west. This will provide a green link to the wider habitat, thus improving connectivity. This is in line with local planning policy and the objectives of the Pennine Foothills Biodiversity Opportunity Zone.

There are extensive areas of SuDs that will be incorporated into the green infrastructure design. Whilst the detailed drawings are not required for the outline application, the SuDs will be ecologically designed, including semi-natural grassland, scrub and trees around the periphery and ponds or wetland areas where the topography and hydrology allow., In line with the Kirklees guidance, the calculations within the metric are relatively conservative in terms of the actual net gain that the SuDs could delivered during the detailed design stage.

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In addition, there are opportunities to improve and enhance the condition and management of the woodland - a priority habitat and also listed within the Pennine Foothills Zone - and the plantation on-site. These enhancements will achieve a significant proportion of net gain for the site. The commitment to deliver these enhancements can be provided within a Woodland Management Plan, which will set out measures to ensure the habitats are appropriately managed to maximise their benefits to biodiversity

The management plan will set out prescriptive, achievable measures that will seek to improve the condition of the woodland. The woodland is already well used by local residents and by engaging with people during this process, it will help to foster a sense of ownership and protection over this woodland. A 'friends of' community group can aid in positive management and protection of local areas, as well as encouraging educational use of the woodland.

Measures to enhance the woodland can include:

- Control and eradication of invasive species to allow for the natural regeneration of native species
- Re-introduction of coppicing
- Scrub control
- Replanting/stock of specific tree species, where necessary
- Establishment of more formal pathways/tracks to minimise trampling of habitat.
- Restriction of public access at certain times of year to allow for the establishment of woodland ground flora, such as snowdrops and bluebells
- Installation of bat and bird boxes
- Retention of standing and lying dead wood.

The Landscape and Ecological Management Plan could be extended to encompass the wider green infrastructure on site to provide the certainty that the net gain is achievable and will be maintained into the future. The management plans could be submitted and secured under a suitably worded planning condition.

Table 6-2 illustrates the headline results, showing a 11.64% net gain in habitats and a 33.60% net gain in hedgerows.

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Table 6-2Headline Biodiversity Net Gain Results

On-site baseline	Habitat units	131.57
	Hedgerow units	1.38
	River units	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	Habitat units	146.89
	Hedgerow units	1.84
	River units	0.00
Off-site baseline	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement &	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention/creation)	Habitat units	15.32
	Hedgerow units	0.46
	River units	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	Habitat units	11.64%
	Hedgerow units	33.60%
	River units	0.00%

6.2.2 Species

6.2.2.1 Bats

The minor adverse effect on commuting and foraging bats during the operational phase is predicted due to the increase in lighting. Mitigation measures to minimise this effect include a sensitive lighting strategy that avoids light spill across habitats and ensure that an unlit corridor is maintained across the site. The principles set out in the ILP Guideline Note 08/18 'Bats and artificial lighting in the UK' (2018) should be adhered to.

6.2.2.2 Breeding Birds

A moderate adverse effect on breeding birds is predicted during both construction and operational phase of the proposed development due to the loss of habitat and increase in noise and human disturbance. Whilst there is a recognised loss of arable land that supports ground nesting birds such as skylarks, there is extensive areas of farmland in the wider area. The enhancement to the woodland will improve habitat for the woodland and edge habitat bird species that were identified during the survey, such as the spotted flycatcher. In addition, the planting of 0.5km of native hedgerows will also offer habitat for a number of species recorded during the surveys.

The woodland management plan and wider landscape and ecological management plan will ensure habitats are correctly managed to maximise the benefits for species.

Any vegetation clearance must be undertaken outside of the breeding bird season (March to August inclusive). If this is not possible then a suitably experienced ecologist must check the vegetation no more than 48 hours prior to site clearance to ensure no active nests are present. If clearance is delayed for more than 48 hours after a check then a

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further check is required. If nesting birds are confirmed to be present, then works within the wider vicinity of the nest would need to be postponed and the area cordoned off until young have fledged and/or nesting has been completed. A further check would then be necessary to ensure that no further nests are present before vegetation clearance could continue. This approach is recommended to minimise the risk of destroying active nests and, therefore, any infringement of legislation.

6.2.3 Additional Mitigation and Enhancement Measures

In addition to the above mitigation measures, the following should be implemented at the relevant time to further mitigate for construction impacts and provide additional enhancements in line National and Local Planning Policy:

- Production of a Construction Environmental Management Plan (CEMP) to ensure sensitive and timely removal of vegetation under an Ecological Clerk of Works as required.
- Provision of replacement nesting habitat for generalist bird species to replace lost nesting opportunities following vegetation removal.
- Installation of a variety of bat and bird boxes to be installed on at least 20% of the new units a, as set out in Table6-3.
- Incorporation of plant species which are native and/or of known benefit for pollinators and other invertebrates in combination with provision of habitat features to support resting/hibernating invertebrates will contribute to meeting the targets of the National Pollinator Strategy as well as deliver biodiversity net gain.

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7 Residual Effects

One minor significant residual effect is considered likely from the proposed development:

- Minor adverse effect on breeding birds – specifically ground nesting farmland birds, namely skylark

The Proposed Development will deliver a significant amount of green infrastructure that, not only will deliver a net gain in biodiversity but will also improve connectivity across the landscape. The GI strategy is in line with local planning policy and will meet the objectives set out in the Pennine Foothills Biodiversity Opportunity Zone, providing enhancements for a number of targeted species.

Hence, whilst it is acknowledged that the loss of intensively farmed arable land will result in a minor adverse effect on the ground nesting birds that utilise this habitat, it is considered that there will be a beneficial effect for other bird species, such as woodland specialists and those that have a close association with residential housing, school and including species of conservation concern such as swift, house sparrow and starling.

A summary of the residual effects on terrestrial ecology, taking account of intended mitigation for the construction phases is provided in Table 7-1.

Table 7-1 Summary of residual effects on terrestrial ecology

Ecological feature	Effect	Significance before mitigation	Mitigation	Residual effect significance
Local Nature Reserves and Local Wildlife Sites	Airborne dust, pollutants	Minor adverse	Implementation of CEMP	Negligible
	Recreational Pressure	Not significant due to provision of Gi Strategy and POS on-site and management of LNR/LWS	n/a	n/a
Broadleaved woodland	Airborne dust, pollutants	Not significant due to distance	Implementation of CEMP	Negligible
	Recreational Pressure	Moderate adverse, permanent	Implementation of Woodland Management Plan and provisions of wider GI Strategy to include POS	Negligible
Bats	Lighting	Minor adverse, permanent	Implementation of sensitive lighting strategy to ensure dark corridors remain across the site.	Negligible
Breeding Birds	Habitat loss, disturbance	Moderate adverse, permanent	Retention, protection and enhancement of woodland and plantation. Planting of 500m hedgerow to improve connectivity. Woodland Management Plan and wider LEMP to ensure appropriate management.	Minor adverse for ground nesting farmland birds. Minor beneficial for woodland, garden specialists

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Ecological feature	Effect	Significance before mitigation	Mitigation	Residual effect significance
			Installation of specialist nest boxes on new dwellings including swift, house martin, starling and house sparrow	
	Disturbance	Moderate adverse, permanent	Woodland Management Plan and wider LEMP to ensure appropriate management.	Negligible

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Appendix A Phase 2 Ecological Survey Reports

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