

Ecological Impact Assessment	
For:	Kirklees Council
Site	Bradley Mills Road, Huddersfield, HD1 6PH
Report Date:	28 th June 2023
Report Reference:	SQ-1138

Surveying Ecologist:

Samuel Toon BSc(hons), GradCIEEM

Natural England Bat Licence:

2018-35446-CLS-CLS

Client:	Kirklees Council
Site Name:	Bradley Mills Road, Huddersfield, HD1 6PH
Grid Reference:	SE 15969 17911
Report:	Ecological Impact Assessment
Date of Survey:	6 th June 2023
Surveyed by:	Sam Toon BSc (Hons) GradCIEEM

Issue:	Revision:	Stage:	Date:	Prepared by:	Approved by:
-	-	Draft	27 th June 2023	Sam Toon BSc(hons), GradCIEEM, Estrada Ecology Ltd	Natasha Estrada MRes, MCIEEM, Estrada Ecology Ltd
1	1	Final	28 th June 2023	Sam Toon BSc(hons), GradCIEEM, Estrada Ecology Ltd	Natasha Estrada MRes, MCIEEM, Estrada Ecology Ltd

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The contents of this report have been produced with due consideration of current best practice guidance, and in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct.

This report should not be submitted as part of a planning application without any accompanying species-specific reports which may have been recommended herein.

Data within this report is valid for a maximum of eighteen months from the date of the survey. After this period, an updated site visit will be required to determine a new ecological baseline.

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Whilst every effort has been taken to ensure the accuracy of this report and its contents, in view of potential ecological constraints to development or the likely presence or absence of species, it must only be viewed as a snapshot in time and not be viewed as definitive. Due to external factors, such as seasonality, weather etc having the potential to affect survey results no liability can be assumed for omissions or changes that may or may not occur after the date this report was produced.

1. EXECUTIVE SUMMARY

- 1.1 Estrada Ecology Ltd was commissioned by Kirklees Council to carry out an Ecological Impact Assessment of Bradley Mills Road, Huddersfield, HD1 6PH to inform any ecological constraints. Under current proposals, it is understood that the site is to be redesigned to facilitate the widening of Bradley Mills Road and footpaths for health and safety purposes.
- 1.2 This report details the methodologies used to assess the ecological value of the site and identify potential ecological constraints. The results of the initial survey work are presented along with any additional species-specific survey recommendations.
- 1.3 The survey recorded no evidence of use by Eurasian otter (*Lutra lutra*) or European water vole (*Arvicola amphibius*) within the site. Habitats within the application boundary fail to support aquatic and riparian mammals. The river Colne is located 90 meters northwest of the site, however, between the river and the site, busy road networks are present and create a permanent barrier to dispersal. It is deemed highly unlikely that aquatic mammals will venture to the site.
- 1.4 The site does not offer any suitable habitat to support any of the following species: hazel dormouse (*Muscardinus avellanarius*); white-clawed crayfish (*Austropotamobius pallipes*); barn owl (*Tyto alba*) or brown hare (*Lepus europaeus*).
- 1.5 The site recorded suboptimal conditions for amphibians, reptiles and invertebrates. Floral diversity was recorded as very low; largely attributed to the poor ground layer within the woodland due to the oversailing canopy preventing sunlight from reaching the ground beneath. No waterbodies were recorded within the site or feeding directly within the site. Natural refugia was present throughout the site with deadwood present along the ground.

- 1.7 The site is dominated by broadleaved woodland which has the potential to support local bat populations. No trees within the site recorded suitable roosting opportunities, suggesting no further surveys are required. The site does provide potential suitable commuting and foraging corridors, however, the section of woodland that is due to be impacted contains artificial light emitting devices, no additional impacts on local bat populations are predicted.
- 1.8 Schedule 8 species of flora were recorded within the site confirmed as bluebell (*Hyacinthoides non-scripta*). However, bluebell are not included within section 1a of schedule 8 which includes protection against intentional picking, uprooting or destruction and are only protected within sections 2a and 2b which includes the sale and advertisement. No further survey or recommendations are required regarding schedule 8 species.
- 1.9 Schedule 9 species were recorded within the site in the form of *Rhododendron* (*Rhododendron sp.*). A previous preliminary ecological appraisal conducted by JCA Arboricultural and Ecological Consultants Ltd (reference 20370/AD) confirmed the presence of Himalayan balsam (*Impatiens glandulifera*) within the site. The survey was conducted on the 13th March 2023 which is outside the optimum time for species identification and is noted within the report. The follow up survey which has informed this report, confirms no Himalayan balsam on site, with a potential misidentification of rosebay willowherb (*Chamaenerion angustifolium*) which is abundant within the site and not a schedule 9 species.
- 1.10 The previous preliminary ecological appraisal also identifies the habitat under UK Habs as w1f which is stated as Lowland Mixed Deciduous Woodland. Within the habitat definition sheet, provided by UK Habs, this is noted as a priority woodland. Further consultation with Magic Maps also confirms this section of woodland as priority habitat and is recorded within the National Forestry Inventory dated 2020, suggesting recent surveys have been conducted in inform the classification. Further considerations are required regarding the scheme.

2 INTRODUCTION

2.2 This report has been designed to comply with standard reporting guidelines provided within *Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Impact assessment in the UK and Ireland Report Writing* (CIEEM, 2018).

2.3 The contents of this report have been produced with due consideration of current best practice guidance and in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct and guidelines.

2.4 Background to the Survey

2.4.1 The survey was commissioned by the client to inform the redesign of Bradley Mills Road to permit widening of the road and associated footpaths for health and safety purposes, and to identify any ecological constraints that may require further survey to inform the Ecological Impact Assessment.

2.4.2 This report details the survey methodologies used to map existing on-site habitats and assess their potential to support protected species. Results from the data search and findings of the ecological survey are then presented and discussed to identify potential ecological impacts as a result of development.

2.4.3 Recommendations further species-specific survey work are provided along within an assessment of mitigation strategies where applicable.

2.5 Site Location and Overview

2.5.1 The survey site is approximately 0.55 hectares in size, dominated by broadleaved semi-natural woodland (A1.1.1) with Bradley Mills Road and associated footpaths also situated within the red line boundary, comprising of hardstanding (J4).

2.5.2 The site is located within the town of Huddersfield, approximately 1.9Km northeast of the town centre. The survey site's central OS grid reference is SE 15969 17911.

2.5.3 Boundaries are formed in the north, east and south by further woodland, with residential properties present to the west of the site.

Figure 1: Location of site in its wider setting (red key line).



Source: Google Earth

2.6 Report Objectives

2.6.1 The key objectives of this report are to:

- Present the findings of the Preliminary Ecological Appraisal (baseline conditions).
- Assess the type and quality of habitats present and potential of those habitats to support protected or notable species.
- Identify ecological constraints that will need to be taken into consideration within the scheme design.
- Make recommendations for further survey required in order to complete the Ecological Impact Assessment; and
- Identify opportunities for ecological enhancement, in line with the National Planning Policy Framework (NPPF, 2021).

3 PLANNING POLICY AND LEGISLATION

3.1 Local Planning Policy

3.1.1 The Local Plan for the area of Kirklees (Kirklees Local Plan, Strategy and Policies, Adopted February 2019) lists several policies relating to biodiversity, habitats and the environment: Policies relevant to the site include:

3.1.1.1 Policy LP24 Design

Good design should be at the core of all proposals in the district and should be considered at the outset of the development process, ensuring that design forms part of pre-application consultation of a proposal. Development briefs, design codes and masterplans should be used to secure high quality, green, accessible, inclusive and safe design, where applicable. Where appropriate and in agreement with the developer schemes will be submitted for design review.

Proposals should promote good design by ensuring:

- a. the form, scale, layout and details of all development respects and enhances the character of the townscape, heritage assets and landscape;
- b. they provide a high standard of amenity for future and neighbouring occupiers; including maintaining appropriate distances between buildings and the creation of development-free buffer zones between housing and employment uses incorporating means of screening where necessary;
- c. extensions are subservient to the original building, are in keeping with the existing buildings in terms of scale, materials and details and minimise impact on residential amenity of future and neighbouring occupiers;
- d. high levels of sustainability, to a degree proportionate to the proposal, through:
 - i. The re-use and adaptation of existing buildings, where practicable;
 - ii. design that promotes behavioural change, promoting walkable neighbourhoods and making walking and cycling more attractive;

- iii. considering the use of innovative construction materials and techniques, including reclaimed and recycled materials;
 - iv. where practicable, minimising resource use in the building by orientating buildings to utilise passive solar design. This includes encouraging the incorporation of vegetation and tree planting to assist heating and cooling and considering the use of renewable energy;
 - v. providing charging points to encourage the use of electric and low emission vehicles;
 - vi. incorporating adequate facilities to allow occupiers to separate and store waste for recycling and recovery that are well designed and visually unobtrusive and allows for the convenient collection of waste;
 - vii. designing buildings that are resilient and resistant to flood risk, where such buildings are acceptable in accordance with flood risk policies and through incorporation of multi-functional green infrastructure where appropriate;
 - viii. designing places that are adaptable and able to respond to change, with consideration given to accommodating services and infrastructure, access to high quality public transport facilities and offer flexibility to meet changing requirements of the resident / user.
- e. the risk of crime is minimised by enhanced security, and the promotion of well-defined routes, overlooked streets and places, high levels of activity, and well-designed security features;
 - f. the needs of a range of different users are met, including disabled people, older people and families with small children to create accessible and inclusive places;
 - g. any new open space is accessible, safe, overlooked and strategically located within the site and well integrated into wider green infrastructure networks;
 - h. development contributes towards enhancement of the natural environment, supports biodiversity and connects to and enhances ecological networks and green infrastructure;
 - i. the retention of valuable or important trees and where appropriate the planting of new trees and other landscaping to maximise visual amenity and environmental benefits; and

- j. the provision of public art where appropriate.

3.1.1.2 **Policy LP30 Biodiversity & Geodiversity**

The council will seek to protect and enhance the biodiversity and geodiversity of Kirklees, including the range of international, national and locally designated wildlife and geological sites, Habitats and Species of Principal Importance and the Kirklees Wildlife Habitat Network.

South Pennine Moors

Proposals which may directly or indirectly compromise achieving the conservation objectives of a designated or candidate European protected site will not be permitted unless the proposal meets the conditions specified in Article 6 (3) - (4) of the Habitats Directive.

Statutory Designated Sites

Statutory designated sites, including the South Pennine Moors Special Protection Area (SPA) and Special Area for Conservation (SAC) and Sites of Special Scientific Interest, are already highly protected through existing laws and legislation. In accordance with legislation, the Council will seek to ensure that harmful impacts to these areas as a result of development proposals are avoided.

Development proposed within or outside a designated Site of Special Scientific Interest, likely to have an adverse effect on the site's special nature conservation features, will not normally be permitted. Exceptionally development will be allowed where the benefits of the development clearly outweigh the impacts on the site's special conservation features and measures are provided to mitigate harmful impacts.

The Dark Peak Nature Improvement Area

Proposals that contribute to the aims and objectives of the Dark Peak Nature Improvement Area will in principle be supported, subject to other policies in this plan. Development likely to have an adverse impact on the aims and objectives of the NIA will not be permitted.

Local Designated Sites & Important Local Ecological Features

Proposals having a direct or indirect adverse effect on a Local Wildlife Site or Local Geological Site, Ancient Woodland, Veteran Tree or other important tree, will not be permitted unless the benefits of the development can be clearly shown to outweigh the need to safeguard the local conservation value of the site or feature and there is no alternative means to deliver the proposal. In all cases, full compensatory measures would be required and secured in the long term.

Habitats and Species of Principal Importance

Proposals will be required to protect Habitats and Species of Principal Importance unless the benefits of the development clearly outweigh the importance of the biodiversity interest, in which case long term compensatory measures will need to be secured.

Biodiversity and Development

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
- (iv) incorporate biodiversity enhancement measures to reflect the priority habitats and species identified for the relevant Kirklees Biodiversity Opportunity Zone.

3.1.1.3 Policy LP32 Landscape

Proposals should be designed to take into account and seek to enhance the landscape character of the area considering in particular:

- a. the need to protect the setting and special qualities of the Peak District National Park, views in and out of the park and views from surrounding viewpoints;
- b. the setting of settlements and buildings within the landscape;
- c. the patterns of woodland, trees and field boundaries;
- d. the appearance of rivers, canals, reservoirs and other water features within the landscape.

3.2 Environment and Biodiversity

3.2.1 Under the National Planning Policy Framework (NPPF, 2021), local planning authorities should aim to conserve and enhance the natural environment when determining planning applications. Local planning authorities also have an obligation to seek opportunities to further enhance the conservation status of Species and Habitats of Principle Importance.

3.2.2 Species and Habitats of Principal Importance for the conservation of biodiversity in England (JNCC, 2009) are covered under Section 41 of the Natural Environmental and Rural Communities (NERC) Act (2006). Species and habitats listed within Section 41 need to be taken into consideration by a public body when performing any of its functions, such as assessing planning applications.

3.2.3 Bat species listed within Section 41 include: Barbastelle (*Barbastelle barbastellus*); Bechstein's (*Myotis bechsteinii*); noctule (*Nyctalus noctula*); soprano pipistrelle (*Pipistrellus pygmaeus*); brown long-eared (*Plecotus auritus*); greater horseshoe (*Rhinolophus ferrumequinum*); and lesser horseshoe (*Rhinolophus hipposideros*).

3.3 Wildlife

under the Wildlife and Countryside Act 1981 (as amended) and the Countryside Rights of Way Act 2000. It is an offence to:

- Deliberately or recklessly capture, injure or kill any wild animal of a European protected species.
- Deliberately or recklessly disturb any such animal.
- Damage or destroy their breeding site or resting place; and
- Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead animal, or any part of, or anything derived from these species.

3.3.2 Disturbance of European Protected Species constitutes any activity which is likely to:

- To impair their ability to survive, to breed or reproduce, or to rear or nurture their young; OR in the case of animals of a hibernating or migratory species, to hibernate or migrate; and
- To significantly affect the local distribution or abundance of the species to which they belong.

3.4 UK Legislation

3.4.1 **Breeding birds** (all species) are protected under the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally kill, injure or take any wild bird and to take, damage or destroy the nest (whilst being built or in use) or eggs. Schedule 1 species are afforded additional protection from disturbance at or near nest sites, including reckless disturbance under the Countryside Rights of Way (CRoW) Act 2000.

3.4.2 **Reptiles** (common species of adder, grass snake, common lizard and slow worm) are protected under the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally kill, injure and trade these animals.

3.4.5

Water vole on 6 April 2008, water voles received an increased level of protection in England and Wales, becoming fully covered by the provisions of Section 9 of the Wildlife and Countryside Act 1981 (as amended). As such, it is now an offence to: intentionally kill, injure or take wild water voles; possess or control live or dead wild water voles or any derivative part of a water vole; intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection; intentionally or recklessly disturb wild water voles whilst occupying a structure or place used for shelter or protection; sell wild water voles or offer or expose for sale or transport for sale; publish or cause to be published any advertisement which conveys the buying or selling of wild water voles. Water vole is listed as a Species of Principal Importance in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and Section 40 requires every public body in the exercising of its functions (in relation Section 41 species) 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'; therefore making the water vole a material consideration in the planning process and requiring a detailed ecological survey before planning permission can be granted.

4 SURVEY METHODOLOGY

4.1 Zone of Influence

4.1.1 The potential impact of a development is not always limited to land within an application boundary. Developments may also have the potential to impact on ecologically valuable sites, species and habitats beyond the boundaries of proposed developments. The Zone of Influence (Zoi) refers to an area of ecologically valuable receptors which a development may impact.

4.1.2 A zone of Influence is determined by multiple factors including:

- The type of impact.
- Potential pathways for impact.
- The location of ecological receptors; and
- The sensitivity of ecological receptors outside the site's boundary.

4.1.3 For the purposes of assessment the zone of influence is considered to be the site plus a 500-metre radius.

4.2 Desk Study

4.1.1 A biological data records search was requested from West Yorkshire Ecology Services (WYES), for a 2km radius from the central grid reference.

4.1.2 Multi-Agency Geographic Information for the Countryside (MAGIC) (www.magic.defra.gov.uk) was accessed in June 2023 to identify any UK Priority Habitats within a 2km radius of the site. MAGIC was also accessed to locate any existing European Protected Species (EPS) licences within the same search radius.

4.3 Assessment Methodology

4.3.1 Biological records returned within the data search for species that are listed within the International Union for the Conservation of Nature (IUCN) Red Data Books are provided (where applicable) with their associated categories:

- Extinct.
- Extinct in the Wild.
- Critically Endangered.
- Endangered.
- Vulnerable; and
- Lower Risk (Conservation Dependent, Near Threatened, and Least Concern).

4.3.2 Bird species are given the red data categories of 'red' or 'amber' where applicable.

4.4 Baseline Surveys

4.4.1 Site Visit and Surveyor Qualifications

4.4.2 The baseline survey was conducted on the 6th June 2023 by ecologist, Sam Toon, BSc (Hons), GradCIEEM of Estrada Ecology Ltd; an experienced ecologist for nine years and the holder of Natural England survey licences.

4.4.3 The site visit consisted of a Phase 1 Habitat Survey and ground level tree assessments. The Phase 1 Habitat Survey covered the area within the site boundary (Figure 1). Habitat surrounding the site was surveyed where possible and reviewed using aerial photography and mapping.

4.4.4 Weather conditions at the time of the site visit were dry, 100% ceiling of cloud cover, a gentle breeze, and temperatures of 15°C.

4.5 Phase 1 Habitat Survey

4.5.1 The phase 1 habitat survey was carried out using methodology based on that described in the JNCC Handbook for Phase 1 habitat survey (2010, revised 2016) and CIEEM's Guidelines for Ecological Impact Assessment (2018).

4.5.2 Distinct habitats were identified, coded, and mapped based on the vascular plant species present and species composition. The Latin names of identified plant species were confirmed using Stace (2010). Features of ecological interest are described within the accompanying Target Notes.

4.5.3 Once identified, habitats were assessed for their potential to support protected or notable species. This included a search for field evidence of fauna and the presence of non-native invasive species.

4.5.4 The assessments were made based on habitat quality, structure, extent, and connectivity within the wider landscape, supported by the results of the data search. It should be noted that an assessment of the potential for on-site habitats to support protected or notable species does not substitute species-specific survey.

4.6 Preliminary Roost Assessment

4.6.1 Trees were subject to an inspection from ground level only. The inspections were carried out in accordance with current best practice guidance (Collins, 2016). Close-focusing binoculars and a high-powered torch were used to identify potential roost features and inspect them, where possible, and to look for evidence of roosting bats.

4.6.2 Potential roost features within trees include woodpecker holes, knot holes, wounds, splits, and cracks. Evidence of bats and their roosts include the presence of droppings, stain or grease marks, feeding remains, or the bats themselves.

4.6.3 The trees and the quality of on-site habitats were then categorised based on the classification criteria in 'Bat Surveys for Professional Ecologists' (Collins, 2016). Classification criteria is presented below:

- **Negligible:** trees or structures with features unlikely to be used by roosting bats. Habitats on site unlikely to be used by foraging or commuting bats.
- **Low:** a structure with one or more potential roost sites that may be utilised by opportunistic bats but are not suitable for use on a regular basis or by a large number of bats. A tree that is of sufficient size and age to contain potential roost features but with no or negligible features seen from the ground. Habitat could be used by a small number of foraging or commuting bats.
- **Moderate:** a structure or tree with one or more potential roost sites that may be utilised on a regular basis but unlikely to support a roost of high conservation status. Continuous habitat that provides good connectivity within the wider landscape and offers foraging opportunities.
- **High:** a tree or structure with one or more potential roost sites suitable for use by a larger number of bats on a regular basis and for longer periods of time. Continuous high-quality habitat that is well connected within the wider landscape and offers high-quality foraging habitat. The site is close to and connected to known roosts.

4.7 Baseline Survey Limitations

4.7.1 An absence of species records from within the data search results, or an absence of field signs of fauna during the habitat survey, does not provide confirmation that a species is absent from within the site or the search area.

4.7.2 The survey data within the baseline studies provides baseline ecological data at the time of survey only and does not include flora or fauna which may be present at different times of the year.

4.8 Additional Surveys as a Result of Baseline Conditions

4.8.1 Ecological constraints pertaining to the proposals based on the Preliminary Ecological Appraisal (PEA) were deemed to be a National Vegetation Classification assessment.

rhododendron was present within the site which will also require precaution during removal.

4.8 Bats

4.8.1 During an ecological walkover of the site, conducted in June 2023, all trees within the red line boundary were subject to a ground level roost assessment by a licenced ecologist (2018-35446-CLS-CLS). No trees were recorded to possess suitable features in which bats could utilise for roosting and were therefore, deemed to have negligible roost suitability.

4.8.2 The quality of the habitat was assessed, based on best practice guidance and field survey, as to its suitability to support roosting bats along with foraging and commuting habitat.

4.8.3 The site was classified as containing moderate suitability for use by bats based on the following:

- Low levels of artificial light are present, with only one road situated to the north in which artificial lighting is present.
- Suitable habitat to support invertebrates in which bats could predate.
- Low levels of disturbance with only one footpath recorded which runs through the woodland but not through the site.

4.9 Breeding Birds

4.9.1 The survey area was investigated on foot to ascertain any evidence of breeding bird activity. A visual inspection for signs of nests was conducted at suitable vantage points at distance for any evidence of parent birds attempting to make nests or leaving nests. Where applicable, any other avian species using the site were recorded from sight and / or sound.

4.9.2 The breeding status of each species can be classified into categories: confirmed breeder; probable breeder; possible breeder; non-breeder; feeding; and visiting.

4.9.3 The behaviour, sex, age and location of individual birds allow conclusions to be drawn about breeding status, based on categories devised by the European Ornithology Atlas Committee (EOAC 1979) and the British Trust for Ornithology (BTO). Breeding evidence used in this report follows EOAC Guidelines 1997 and BTO Guidelines.

4.10 Ecological Constraints

4.10.1 None were recorded within the site that impacted the survey.

4.11 Evaluation Criteria

4.11.1 The importance and ecological value of habitats and species within the site was evaluated following established factors as set out with The Chartered Institute of Ecology and Environmental Management Guidelines.

4.11.2 When assessing the ecological value of a site and its features, consideration has been given to the Ratcliffe criteria (Ratcliffe 1977) as outlined in Table 1.

Table 1: The Ratcliffe Criteria.

CRITERIA FOR ASSESSING NATURE CONSERVATION VALUE	
Size	In lowland Britain, semi-natural habitats tend to be highly fragmented and the value of a site usually increases with its size.
Diversity	The variety in number of both communities and species depends largely on the diversity of habitat. Diversity is also related to area and the number of both plant and animal species shows a marked tendency to increase with the size of the area.
Naturalness	Truly natural habitats, unmodified by man, are rare in Britain, and nature conservation deals largely with semi-natural habitats. Semi-natural habitats must nevertheless exhibit a level of quality marked by a lack of features which indicate gross or recent human modification. This criterion has to take into account the fact that some habitats, (e.g. grasslands, heathlands) are anthropogenic in origin.
Rarity	One of the most important purposes of nature conservation is to protect rare or local species and communities. The general principle is that the rarer the species or community, the greater the value for nature conservation. Rarity is related to the frequency of occurrence at national or county level.
Fragility	Fragility reflects the degree of sensitivity of habitats, communities and species to environmental change and involves a consideration of intrinsic and extrinsic factors.
Typicalness	It is necessary to represent the typical and commonplace within a field of ecological variation as well as the best examples of particular ecosystems.
Recorded History	The extent to which a site has been used for scientific study and research is a factor of some importance.
Position in an ecological/geographical unit	The relationship of a site to adjacent areas of nature conservation value. It is important to recognise the important and characteristic formations, communities and species of a district.
Potential Value	Certain sites could, through appropriate management or natural change, develop a greater nature conservation interest.
Intrinsic Appeal	The knowledge of the distribution and numbers of popular groups of species, such as birds, is greater than for obscure groups. Similarly, colourful wild flowers and rare orchids arouse more enthusiasm than liverworts. It is pragmatic to give more weight to some groups than to others.
Criteria are based on Ratcliffe, D.A. (1977) <i>A Nature Conservation Review</i> , Cambridge University Press	

<https://apps2.staffordshire.gov.uk/SCC/TrimDocProvider/?ID=003/07/06/04/8592>

4.11.3 An evaluation of the importance of species groups and habitats recorded within the site was undertaken and evaluated in a geographical context as outlined in best practice guidance (CIEEM 2018). The following criteria were used:

- International and European.
- National.
- Regional.
- Metropolitan County.
- Local authority wide.

Table 2: Ecological resources / features considered relevant.

Resource /Feature
Internationally Designated Sites within a 2Km radius. Development will only be permitted in cases where suitable mitigation is included which satisfies the local council
Nationally Designated Wildlife Sites within a 2Km radius
Locally Designated Wildlife Sites within a 1Km radius
European Protected Species within a 1Km radius (sessile) and 2Km radius mobile.
Habitats of principal importance for conservation of biodiversity
UKBAP Species / Habitats
Wildlife and Countryside Act species

5. SURVEY RESULTS

5.1 Desk Study

5.1.1 Statutory and Non-Statutory Designated Areas

5.1.1.1 Consultation with MAGIC recorded one statutory designated site within a 2Km radius from grid.

Table 3: Statutory Designated Sites Within 2km Radius from Grid.

Name	Area	District	Grid Ref.	Description	Distance from Site
Dalton Bank LNR	20.07	Kirklees Metropolitan Council	SE 172 186	A mix of conifer plantations and native woodlands, the grassland is alive with crickets and other insects in the summer and offers a good place to hunt for fungi in the autumn.	927 meters east

5.1.1.2 Four non-statutory designated sites were recorded within a 2Km radius from grid.

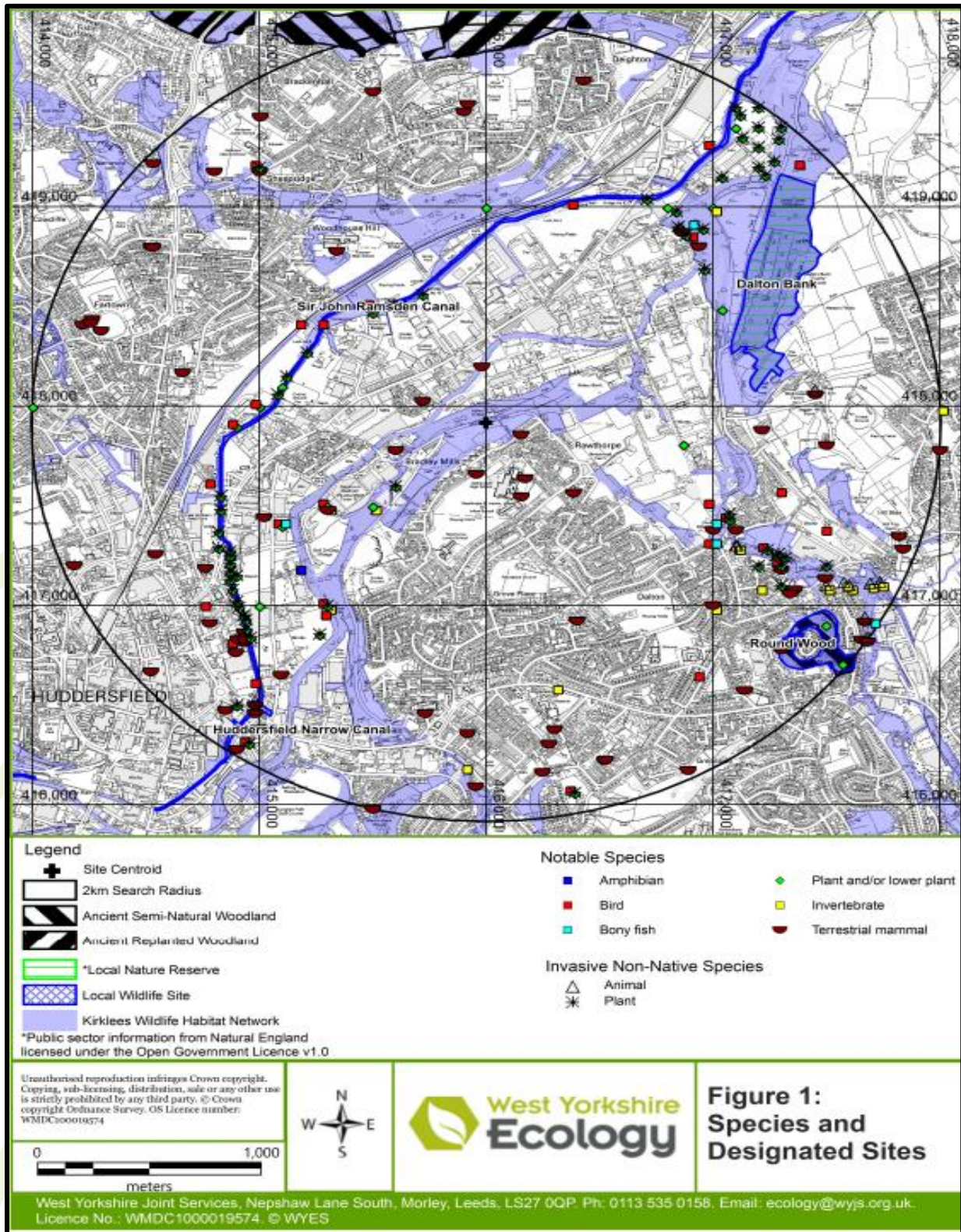
Table 4: Non Statutory Designated Sites Within 2km Radius from Grid.

Name	Designation
Dalton Bank	Local Wildlife Site
Huddersfield Narrow Canal	Local Wildlife Site
Round Wood, Tandem	Local Wildlife Site
Sir John Ramsden Canal	Local Wildlife Site

5.1.1.3

There are no Ancient Semi-natural Woodland/Ancient Replanted Woodlands within 100m of the site centroid/site boundary.

Figure 2: Non-statutory Designated Sites within a 2km radius from grid.



WYES

5.1.2 European Protected Species Licences

5.1.2.1 Following consultation with MAGIC (www.magic.defra.gov.uk) three European Protected Species Mitigation Licenses (EPSML) were recorded as being granted within a 2km radius from grid.

Table 5: European Protected Species Mitigation Licenses granted within a 2Km radius from grid.

Date	Licence Reference	Species	Purpose	Distance from site
2013	EPSM2012-4870	Common Pipistrelle	Destruction of a resting place	1.58km east
2014	2014-856-EPS-MIT	Common Pipistrelle	Destruction of a resting place	1.77km southwest
2011-2013	EPSM2011-3176	Common Pipistrelle	Destruction of a resting place	2km southwest

5.1.3 Habitats

5.1.3.1 Priority habitat is recorded within the site boundary via consultation with Magic Map. Priority Deciduous Woodland is present and dominates the site. Furthermore, the site is noted within the records search as being within the Kirklees Wildlife Habitat Network.

5.1.3.2 Species listed on Schedule 8 and 9 of the Wildlife and Countryside Act 1981 (as ammended) were recorded within the application boundary.

5.1.3.3 Bluebell were abundant throughout the ground flora which are listed on Schedule 8. However, Bluebells are not protected under section 13 1a of schedule 8 which states:

intentional picking, uprooting or destruction

Bluebells are only protected from:

Selling, offering for sale, possessing or transporting for the purpose of sale (live or dead, part or derivative) (Section 13 2a);

advertising (any of these) for buying or selling (Section 13 2b)

5.1.3.4 Provided the actions of the client in relation to the species does not violate the sections of schedule 8 in which, bluebell are protected, no further action is required.

5.1.3.5 Rhododendron, an invasive non native species listed on schedule 9 of the wildlife and countryside act 1981 was recorded within the woodland. Further details relating to the removal, if required, is detailed further in this report.

5.1.3.6 A previous preliminary ecological appraisal conducted by JCA Arboricultural and Ecological Consultants Ltd (reference 20370/AD) confirmed the presence of Himalayan balsam (*Impatiens glandulifera*) within the site. The survey was conducted on the 13th March 2023 which is outside the optimum time for species identification and is noted within the report. The follow up survey which has informed this report, confirms no Himalayan balsam is present on site

5.1.3.7 Further priority habitats, excluding the priority habitat currently within the site as noted in paragraph 5.1.3.1, within the search radius include:

- Further Deciduous Woodland, recorded immediately outside the southern and northern boundaries.
- Ancient and Semi Natural Woodland, the closest compartment being approximately 1.54km southeast.
- Ancient Replanted Woodland, the closest compartment being approximately 1.83km north.

5.2 Phase 1 Habitat Survey

- Records for water vole (*Arvicola amphibius*) and otter (*Lutra lutra*) were discounted due to lack of suitable habitat on the site.
- Two western European Hedgehog (*Erinaceus europaeus*) records were returned.
- One hundred and fifteen bat records were returned for the search radius, including common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), noctule (*Nyctalus noctula*), leisler (*Nyctalus leisleri*) and brown long-eared bat (*Plecotus auritus*), all dated between 1998 and 2020.
- The remaining records comprise of invertebrate records, teleost records and flowering plant records.
- A full list of biological records is available upon request.

5.2.2 Phase 1 Habitat Classifications

5.2.2.1 The Phase 1 habitat mapping description is, predominantly:

- A1.1.1 Broadleaved Semi-Natural Woodland
- J4 Hardstanding

5.2.2.2 A list of all species recorded on the site during the survey can be found in Appendix One.

5.2.2.3 Broadleaved Woodland

5.2.2.3.1 Dominating the site, broadleaved woodland is present and is situated south of the red line boundary. The full extent of the woodland extends beyond the site boundary to the south and to the north.

5.2.2.3.2 The previous preliminary ecological appraisal also identifies the habitat under UK Habs as w1f which is stated as Lowland Mixed Deciduous Woodland. Within the habitat definition sheet, provided by UK Habs, this is noted as a priority woodland. Further consultation with Magic Maps also confirms this section of woodland as priority habitat and is recorded within the National Forestry Inventory dated 2020, suggesting recent surveys have been conducted to inform the classification.

5.2.2.3.3 The woodland was assessed for its baseline condition in relation to biodiversity net gain. The woodland was considered as irreplaceable habitat due to its priority status. This will need to be addressed prior to the proposed works as bespoke compensation will be required for any area of the woodland that is removed. The

woodland scored 33 out of 39 in line with Defra's condition assessment, which is confirmed as a good condition.

5.2.2.3.4 Species of trees recorded within the woodland included alder (*Alnus glutinosa*), sycamore (*Acer pseudoplatanus*), silver birch (*Betula pendula*), pedunculate oak (*Quercus robur*), horse chestnut (*Aesculus hippocastanum*), honey locust (*Gleditsia triacanthos*), ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*) and cherry (*Prunus avium*).

5.2.2.3.5 The ground flora within the woodland comprised of bramble (*Rubus fruticosus*), nettle (*Urtica dioica*), bracken (*Pteridium sp.*), bluebell (*Hyacinthoides non-scripta*), rhododendron (*Rhododendron sp.*), dog rose (*Rosa canina*), perennial rye grass (*Lolium perenne*), holly (*Ilex aquifolium*), rosebay willowherb (*Chamaenerion angustifolium*) and wild strawberry (*Fragaria vesca*).

5.2.2.3.6 All trees were assessed a ground level by a licenced bat ecologist (2018-35446-CLS-CLS) to assess for potential to support roosting bats. No suitable features were recorded on any of the trees, deeming them all to have negligible roost suitability. No further roost assessment surveys in relation to bats are recommended.

5.2.2.3.7 No nests were recorded within any of the trees; however, the woodland provides good opportunities for nesting birds to utilise.

Figure 4: Woodland



5.2.2.4 Hardstanding

5.2.2.4.1 Situated in the north of the site which comprises the focus of the works, Bradley Mills Road and footpaths are situated. This section comprises of concrete footpaths and tarmac roads.

5.2.2.4.2 The areas of hardstanding as noted, provide no intrinsic ecological value or functionality in their current state.

5.2.3 Protected and Notable Species

5.2.3.1 Habitats within and adjacent to the site are considered unsuitable to support: hazel dormouse (*Muscardinus avellanarius*); brown hare (*Lepus europaeus*); white-clawed crayfish (*Austropotamobius pallipes*); and barn owl (*Tyto alba*). Therefore, these species are not considered any further in this report.

5.2.3.3 Bats: Preliminary Roost Assessment

5.2.3.3.1 All trees within the development boundary were subject to a ground level roost assessment. All trees within the site recorded negligible roost suitability when assessed by a licensed bat ecologist (2018-35446-CLS-CLS). No further surveys are required .

5.2.3.3.2 In a local context the site fails to provide major foraging grounds or commuting lines for bats.

5.2.3.3.3 The woodland within the site and immediately outside the southern and northern boundary provides suitability for use as a foraging ground / minor commuting line for bats within the locality.

Table 6: Tree features commonly used by bats for roosting, shelter and field signs that may indicate use of trees by bats (BCT Guidelines 2016).

Features of trees used as bat roosts	Signs indicating possible use by bats
Natural holes	Tiny scratches around entry point
Woodpecker holes	Staining around entry point
Cracks/splits in major limbs	Bat droppings in, around or below entrance
Loose bark	Audible squeaking at dusk or in warm weather
Hollows/cavities	Flies around entry point
Dense epicormic growth	Distinctive smell of bats
Bird and bat boxes	Smoothing of surfaces around cavity

5.2.3.4 Amphibians

5.2.3.4.1 Two amphibian record was returned from the records search for the search radius.

5.2.3.4.2 No waterbodies were recorded within the site, and none were recorded to feed directly into the site. The site provides negligible aquatic suitability for amphibians.

5.2.3.4.3 The closest aquatic receptor was recorded as the river Colne, approximately 90 meters northwest at its closest point. However, between the site and the waterbody, permanent barriers to dispersal are present in the form of Bradley Mills Road. Furthermore, the site is elevated from ground level, including the presence of a large permanent wall which would prevent amphibians accessing the site from the northern elevation. No aquatic receptors were recorded south following a desktop survey.

5.2.3.4.4 The site provides suitable terrestrial habitat for amphibians, with the presence of dead wood on the ground which would act as suitable refugia. Furthermore, the oversailing canopy of the trees would also act as a suitable cover from aerial predation.

5.2.3.4.5 It is deemed, following a survey of the site and a desktop study, that it would be highly unlikely that amphibians will be impacted by the scheme, due to the lack of connectivity and surrounding waterbodies.

5.2.3.5 Reptiles

5.2.3.5.1 No reptile records were returned for the search radius.

5.2.3.5.2 No evidence of reptiles was recorded during the site survey. The site provides suitable terrestrial habitat with the presence of natural refugia in the form of dead wood, as well as offering protection via the overhanging canopy from aerial predation. However, connectivity is limited to the south in which, no waterbodies are present following a desktop survey.

5.2.3.5.3 The site offers negligible suitability for basking opportunities due to the dense canopy which covers the site, suggesting further unsuitability for reptiles.

5.2.3.5.4 With due consideration to the scheme, it is deemed unlikely that impacts upon reptile populations will occur.

5.2.3.6 Breeding Birds

5.2.3.6.1 No evidence of breeding was recorded within the site in areas surveyed.

5.2.3.6.2 Habitats within the site provided good suitability to support breeding birds of a passerine species, due to the abundance of trees within the site.

5.2.3.6.3 With due consideration to the scheme, it is deemed that nesting bird populations could be impacted by the scheme design. Further recommendations have been made within this report.

5.2.3.7 European Hedgehog

5.2.3.7.1 No evidence of European hedgehog (*Erinaceus europaeus*) was recorded during the site visit.

5.2.3.7.2 The habitat within the site was deemed suitable for foraging purposes for hedgehog. It is recommended a precautionary method statement is created ahead of vegetation clearance to incorporate possible hedgehog presence.

5.2.3.8 Aquatic Mammal

5.2.3.8.1 The site provided suboptimal conditions for aquatic mammals, due to the lack of aquatic receptors and lack of connectivity to the river Colne in the northwest.

5.2.3.8.2 It is deemed highly unlikely that aquatic mammals will be impacted by the proposed scheme. No further assessment is deemed necessary.

6 DISCUSSION AND RECOMMENDATIONS

6.1 Development Proposals

6.1.1 Under current proposals, the site is proposed for maintenance works to widen Bradley Mills Road and the footpaths for health and safety purposes.

6.2 Statutory and Non-Statutory Designated Areas

6.2.1 The site does not lie within or adjacent to any statutory or non-statutory designated sites for nature conservation.

6.2.2 One Statutory Designated Site was recorded within a 2km radius from grid.

6.2.3 Four non-statutory designated sites were recorded within a 2Km radius from grid.

6.2.4 No direct or indirect impacts are predicted via encroachment. Due to the size of the proposed development, it is considered likely that any ecological impacts will be restricted to a site level, as works will be concentrated within the site itself and no impacts are predicted.

6.3 Impacts on Habitats and Species

6.3.1 Priority Habitats

6.3.1.1 Priority Deciduous Woodland was recorded within the site and immediately north and south of the site, following consultation with magic maps. The woodland was also recorded as a Kirklees Wildlife Habitat Network.

6.3.1.2 Furthermore, the habitat is recorded within the Priority Habitats Inventory, created by Natural England. The information provided shows that the latest version was created October 2022, suggesting a recent survey has been conducted to confirm the habitat.

6.3.1.3 The presence of the priority habitat suggests that, in line with the biodiversity net gain assessment, bespoke compensation for the area of woodland due to be removed, will be required prior to satisfy the net gain metric. The details of the bespoke compensation will need to be addressed with a qualified professional, following discussions with the local planning authority to ensure a suitable site is available.

- 6.1.4 A second option could be to translocate the woodland to a suitable site. This must only be done following consultation with a suitably qualified and experience landscape architect.

Figure 5: Priority Habitats within site at Bradley Mills Road



Natural England

6.3.2 Assessment of Effects

- 6.3.2.1 Under current proposals, based on the proposals outlined in Figure one, it is assumed that all vegetation within the red line boundary is due to be removed to facilitate the works. As highlighted within the report, this habitat is considered priority habitat and will need further assessment, prior to works in relation to bespoke compensation within the scheme.

6.3.3 Invasive Plant Species

- 6.3.3.1 Non-native invasive species were recorded during the survey listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) within the site. Rhododendron was recorded centrally within the site in a single stand.
- 6.3.3.2 It is an offence to knowingly and intentionally spread any plant listed on schedule 9. It is, however, not an offence to have the species on land, as long as it is not spread. It is an option to retain the species

within the landscaping design for the site plan to reduce the risk of breaching biosecurity.

- 6.3.3.3 If retaining the species is not an option for the scheme, then removal is possible provided that precautions are made to prevent the spread of the species. The removal will require the entire root systems to be removed to prevent the species regrowing. All plant material of each genus must be kept within itself when removed from its rooted location.
- 6.3.3.4 Once all of the species has been removed, one option is to take it to a licensed landfill to be disposed of. Another option is to burn it on site; however, prior notice must first be given to the Environment Agency to make them aware of the burning of the material.
- 6.3.3.5 A previous preliminary ecological appraisal conducted by JCA Arboricultural and Ecological Consultants Ltd (reference 20370/AD) confirmed the presence of Himalayan balsam (*Impatiens glandulifera*) within the site. The survey was conducted on the 13th March 2023 which is outside the optimum time for species identification and is noted within the report. The follow up survey which has informed this report, confirms no Himalayan balsam is present on site

6.3.4 Native Flora

- 6.3.4.1 Bluebells were recorded in abundance within the site along the ground flora of the woodland. Bluebells are a schedule 8 species, however, they are only noted within section 13 2a and 2b. Bluebells are not protected within section 13 1a, which details the uprooting, intentional picking and damage of the plant.
- 6.3.4.2 As a result, it is deemed that no issues are to be encountered with the proposed scheme as a result of the presence of bluebells. Furthermore, it was recommended that a full botanical survey (Non NVC), was recommended by the PEA (reference 20370/AD), due to the presence of bluebells and Himalayan balsam.
- 6.3.4.3 It has been concluded within this assessment that due to the lack of Himalayan balsam and details regarding bluebells, as well as the lack of any further notable or protected/invasive species, no further botanical assessment is deemed necessary for the woodland.

6.3.5 Species

6.3.2 Bats

6.3.2.1 The site was deemed suitable to support minor foraging and commuting grounds within and immediately outside the site. No suitable roosting features were recorded within the site. Provided the current levels of artificial lighting for the road are not exceeded within the newly proposed redevelopment of the road, no impacts are predicted on bat populations within the local area.

6.3.3 Artificial Light

6.3.3.1 Illuminating habitat used for foraging and commuting bats can affect the way bats respond to features in the landscape. Artificial light can act as a barrier to bats and disrupt flight paths of some species. Different species of bats have differing light tolerances when commuting and foraging, with bat species that emerge later in the evening such as *Myotis* or *Plecotus* species being more sensitive to increased light levels (Stone, 2014). Species such as *Pipistrellus*, *Nyctalus* and *Eptesicus* are thought to be less affected. Without mitigation the development could lead to enhance light levels splaying over the northern site boundary.

6.3.3.2 It has also been shown that insect prey can be attracted to artificial lighting drawing insects away from their natural habitat creating a 'vacuum effect' (Eisenbeis, 2006), disadvantaging light-sensitive bat species and lead to a competitive advantage of those species unable to take advantage of new artificially lit areas (Artettaz, et al., 2000 and Davies, et al 2012).

6.3.4 Mitigation Measures:

- Artificial light overspill from the proposed development should be avoided on the northern site boundary.
- A suitable lighting strategy should be compiled to ensure no disturbance from artificial light associated with the development onto the noted boundary feature and associated habitats.

6.3.4.1 Significance of Residual Effects: Subject to a suitable lighting strategy, bats are not considered a constraint to the proposals, provided the trees are to be retained.

6.3.5 Breeding Birds

6.3.5.1 At the time of survey, no evidence to indicate use of any of the trees or habitats within the curtilage of the site by breeding birds was recorded, however, early signs of potential nesting activity were recorded by multiple species.

6.3.5.2 In the absence of mitigation, potential impacts include:

- Direct impacts on nesting birds, their nests, eggs and chicks from small-scale damage/ destruction of habitat.
- Indirect impacts via disturbance from noise and vibrations during the construction phase.

6.3.5.3 In the absence of mitigation, the effects on birds (direct and indirect) are assessed as being minor due to the availability of alternative habitat in residential gardens and adjacent land use within the immediate area. Birds are highly mobile, and the small scale of the habitat removal is likely to be short-term.

6.3.5.4 Where feasible, works should be conducted outside the breeding bird season. The season is typically recognised as being March to September (inclusive). Where this is not feasible then a walkover survey for breeding birds should be conducted prior to the works.

6.3.5.5 Should nests or activity to suggest birds are breeding or attempting to breed in any of the vegetation, then all works should cease, and a suitably qualified ecologist be consulted. A suitable buffer zone, as advised by a suitably qualified ecologist, should be installed to protect the nest, and prevent disturbance.

6.3.5.6 To mitigate for any loss of potential nesting habitat, new planting is proposed as part of a wider scheme design. The new planting will provide resources for both nesting and foraging birds.

6.3.6 Construction Environmental Management Plan (CEMP)

6.3.6.1 The river Colne is situated within 100 meters of the proposed area of works, suggesting that certain works could cause minor impacts to the waterbody, including dust particulates entering the waterbody. Furthermore, the noise, vibration and lighting (in the event of night working), has the potential to cause impacts on the woodland and subsequent biodiversity.

6.3.6.2 It is deemed that a CEMP will be required to mitigate potential pollutants and further impacts from the immediate area and notable and protected species.

6.3.7 Hedgehog

6.3.7.1 No evidence of European hedgehog (*Erinaceus europaeus*) was recorded during the site visit.

6.3.7.2 It is unlikely that the species will be adversely impacted by the proposed development, providing that suitable precautionary site clearance works are undertaken. No further survey is recommended at this juncture.

6.3.8 Precautionary Mitigation Measures:

- Any impact from construction can be minimised by considering the timing and method of clearance.
- Whilst there is no optimum time of year for habitat clearance due to hedgehogs' use of nests all year round, an autumn site clearance will avoid the bulk of the breeding season and will be prior hibernation. A high cut / low cut method of removal will also allow a check for nests in between cuts.
- The removal of all vegetation from site when cleared is essential immediately after (same day) it has been conducted to prevent piles of vegetation building up on site which would provide a suitable habitat for hedgehogs to utilise and nest.

7 RECOMMENDATIONS FOR HABITAT ENHANCEMENT

- 7.1 In line with National planning Policy Framework (NPPF) paragraph 170, the application should demonstrate enhancements in biodiversity.
- 7.2 Enhancing and managing retained habitat will improve habitat quality and connectivity throughout the wider landscape and provide areas for shelter and food sourced for a wider variety of species.

8 Biodiversity Net Gain (Baseline)

8.1 Introduction

- 8.1.1 The Proposed Scheme has adopted the Defra metric 4.0 (2023) to undertake baseline and linear unit (LU) calculations (where applicable) to quantify the biodiversity which will be lost to the Scheme. At this juncture, no definitive planting scheme has been provided to calculate post development calculations.

- 8.1.2 **Objectives of the assessment:** Assess the onsite habitats using the DEFRA biodiversity metric 4.0.

8.2 Biodiversity Net Gain Policy

- 8.2.1 The updated National Planning Policy Framework¹ (NPPF) published in February 2019 states (paragraph 170) that:

“Planning Policies and decisions should contribute to and enhance the natural and local environment by... minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.”

- 8.2.2 The updated Planning Policy Guidance (PPG) for the Natural Environment, updated in July 2019 states (paragraph 020) that:

“Net gain in planning describes an approach to development that leaves the natural environment in a measurably better state than it was beforehand.”

- 8.2.3 The updated PPG provides examples of how biodiversity net gain can be achieved. Measures suggested including “creating new habitats” and “enhancing existing habitats”.

8.2.4 This report uses the DEFRA Biodiversity Metric 4.0 Calculation Tool Beta (published April 2023) to produce a quantifiable amount of biodiversity units at the baseline.

8.3 Initial Biodiversity Assessment

8.3.1 This report has been produced in accordance with the methodology set out in the following guidance documents:

- The Biodiversity Metric 4.0 – User Guide (April 2023); and
- The Biodiversity Metric 4.0 – Technical Supplement (April 2023).

8.3.2 The Biodiversity Metric 4.0- Calculation Tool- April 2023 was used for the calculations.

8.3.3 The size and condition of each baseline habitat type has been assessed from field survey undertaken in 2023 by a suitably qualified ecologist.

8.4 Limitations & Assumptions

8.4.1 Not all habitats listed in the DEFRA calculator are directly comparable with the habitats within the development boundary. As a result, professional judgement has been used to best match pre- and post-construction habitat types to those identified within the DEFRA Biodiversity Metric 4.0 calculator.

8.4.2 This report does not consider any subsequent changes in habitat types post Preliminary Ecological Assessment (PEA) survey (June 2023).

8.4.3 At this stage, no formal landscaping scheme has been compiled thus planting ratios and habitat types for post development calculations cannot be compiled accurately.

8.4.4 The street tree helper within the Metric has been used to aid area calculations where applicable.

8.5 Results

8.5.1 Baseline, Pre-construction Biodiversity Units

8.5.1.1 A summary of the results of the DEFRA biodiversity metric for existing baseline, pre-construction habitats are shown in table 6.

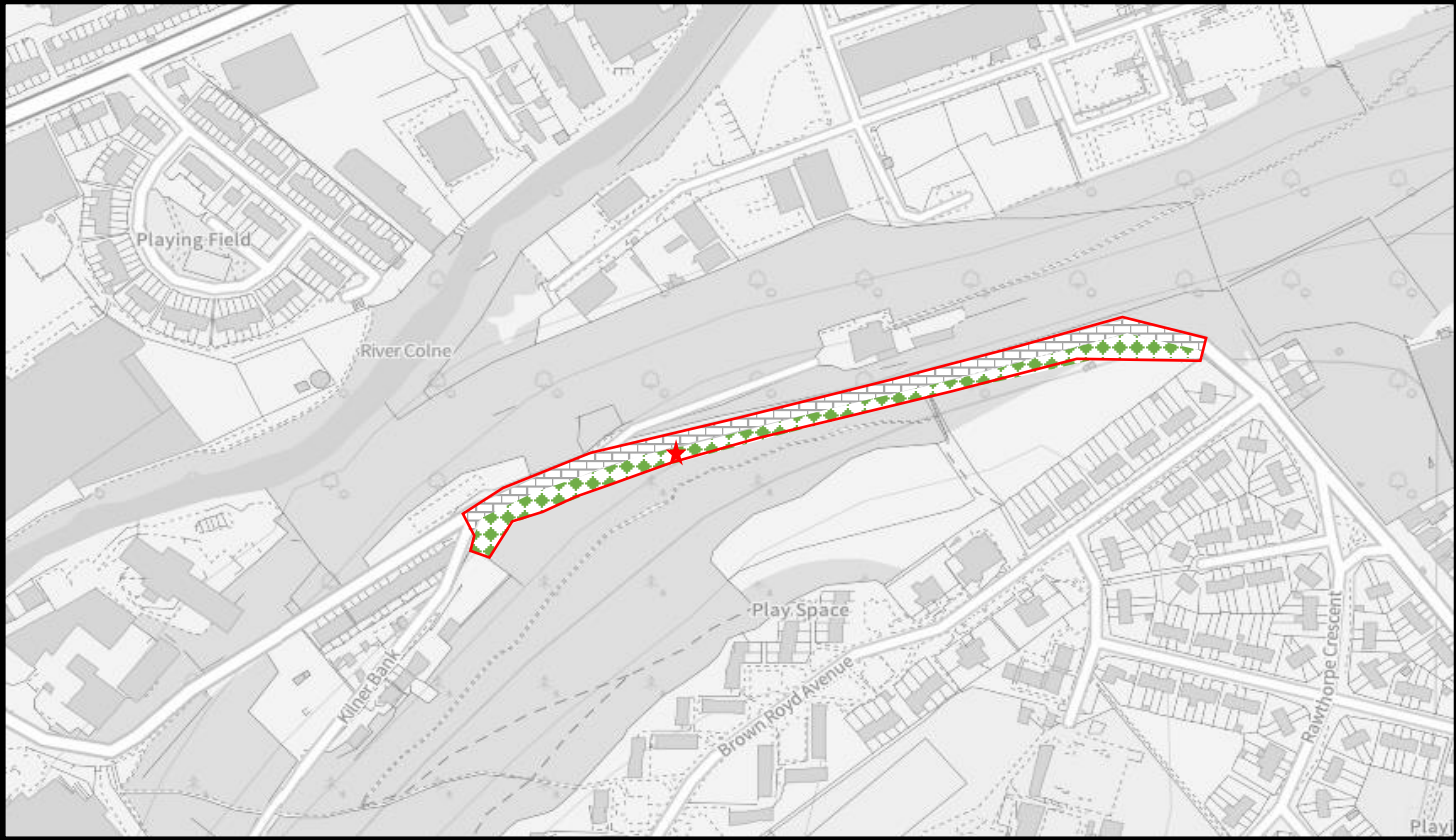
Table 6: Baseline Habitat units



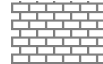

Habitat Type	Area (Ha)	Distinctiveness	Condition	Strategic significance	Biodiversity units	Irreplaceable Habitat?
Woodland and Forest; Lowland Mixed Deciduous Woodland	0.2358	High	Good (scored 33 out of 39)	High	4.88	Yes
Urban; Developed Land Sealed Surface	0.2573	V. Low	N/A - Other	Low	0.00	No
Total	0.4931	-	-	-	4.88	-

8.5.1.2

Upon finalisation of the landscaping plan, post development credits can be calculated and an assessment of whether the scheme design can achieve a net gain in biodiversity.

Appendix One: Phase 1 Habitat Map.



Habitat/Feature	Key
Site Boundary	
Broadleaved Woodland	
Hardstanding	
TN1 - Schedule 9 Species (Rhododendron)	

MAGIC Map

Appendix Two: Survey site species list.

Vernacular	Taxon
Flora	
Alder	<i>Alnus glutinosa</i>
Ash	<i>Fraxinus excelsior</i>
Blackthorn	<i>Prunus spinosa</i>
Bluebell	<i>Hyacinthoides non-scripta</i>
Bracken	<i>Pteridium sp.</i>
Bramble	<i>Rubus fruticosus</i>
Cherry	<i>Prunus avium</i>
Clover	<i>Trifolium sp.</i>
Common Nettle	<i>Urtica dioica</i>
Dog Rose	<i>Rosa canina</i>
Hawthorn	<i>Crataegus monogyna</i>
Hemlock	<i>Conium maculatum</i>
Holly	<i>Ilex aquifolium</i>
Honey Locust	<i>Gleditsia triacanthos</i>
Horse Chestnut	<i>Aesculus hippocastanum</i>
Pedunculate Oak	<i>Quercus robur</i>
Perennial Ryegrass	<i>Lolium perenne</i>
Rhododendron	<i>Rhododendron sp.</i>
Rosebay Willowherb	<i>Chamaenerion angustifolium</i>
Silver Birch	<i>Betula pendula</i>
Sycamore	<i>Acer pseudoplatanus</i>
Wild Strawberry	<i>Fragaria vesca</i>

Appendix Three: Suggested wildlife-friendly plantings to enhance site biodiversity.

Common Name	Scientific name	Wildlife value
Large trees		
Ash	<i>Fraxinus excelsior</i>	68 species of insects/mites and 32 species of lepidoptera. Seeds eaten by birds and mammals.
Beech	<i>Fagus sylvatica</i>	98 species of insects/mites and 51 species of lepidoptera. The masts are eaten by birds and
Cherries	<i>Prunus avium, Prunus padus</i>	9 species of lepidoptera. Berries eaten by birds.
Elm	<i>Ulmus procera</i>	Good tree for insects and birds. 124 species of insects/mites and 24 species of lepidoptera are associated with elm trees.
Oaks	<i>Quercus pedunculata, Q. Robur</i>	423 species of insects/mites and 193 species of lepidoptera. Acorns eaten by a variety of birds and mammals. Very important for insect eating birds.
Scots pine	<i>Pinus silvestris</i>	91 species of invertebrate are known to use this species.
Spruce	<i>Picea spp.</i>	73 species of invertebrate are known to use this species.
Small leaved lime	<i>Tilia cordata</i>	
White willow	<i>Salix alba</i>	450 species of insects/mites and 166 species of lepidoptera.
Medium/small trees		
Alder	<i>Alnus glutinosa</i>	141 species of insects/mites and 71 species of lepidoptera. Seeds are good for birds such as
Apples	<i>Malus spp.</i>	118 species of insects/mites and 76 species of lepidoptera. Fruits are eagerly consumed by birds
Field maple	<i>Acer campestre</i>	149 species of insects/mites and 24 species of lepidoptera. Fruits eaten by small mammals.
Holly	<i>Ilex aquifolium</i>	7 species of invertebrate are known to use this species. Berries good for birds and small mammals. Caterpillars of the holly blue butterfly feed on the
Pears	<i>Pyrus spp.</i>	Good for invertebrates. Fruits are eagerly consumed by birds and mammals.
Rowan	<i>Sorbus aucuparia</i>	58 species of insects/mites and 28 species of lepidoptera. The ripe berries attract birds such as
Birch (silver and downy)	<i>Betula pendula, B pubescens</i>	229 species of invertebrates are known to use these species. Best tree for moth larvae. Catkins good food source for birds such as redpolls and tits.

Common Name	Scientific name	Wildlife value
Plants for hedges		
Blackthorn	<i>Prunus spinosa</i>	229 species of invertebrates are known to use this species. Good for nesting birds if grown as thicket or in hedge. Rich in insects. Fruit for birds. Black hairstreak butterfly lays its eggs mainly on blackthorn.
Buckthorn	<i>Rhamnus catharticus</i>	Berries for birds. Important food plant for brimstone butterfly larvae.
Cherry plum	<i>Prunus cerasifera</i>	Nectar and fruits for invertebrates. Fruits are eagerly consumed by birds and mammals.
Elder	<i>Sambucus nigra</i>	Berries for birds and nectar for insects.
Guelder rose	<i>Viburnum opulus</i>	Nectar for insects, particularly hoverflies. Fruits for birds and small mammals, especially liked by woodmouse. Note: leaves, bark and berries are all poisonous.
Hawthorn	<i>Crataegus monogyna</i>	149 species of invertebrate are known to use this species. Berries eaten by birds. Nectar. Berries good food source for thrushes, redwings and fieldfares. Good nesting if dense. Excellent for moth larvae.
Hazel	<i>Corylus avellana</i>	73 species of insects/mites and 68 species of lepidoptera. Nuts eaten by birds and mammals i.e.
Privets	<i>Ligustrum spp.</i>	24 species of insects/mites, nectar for the butterflies. Berries eaten by birds.
Climbers/scramblers		
Brambles	<i>Rubus fruticosus agg.</i>	Nectar source for bees and butterflies. Berries for birds and mammals.
Dog Rose	<i>Rosa canina</i>	Provides nectar for bees and butterflies. Hips good for small birds and mammals.
Ivy	<i>Hedera helix</i>	Provides late nectar source and cover/hibernating sites for invertebrates. Food source for the Holly Blue butterfly larva.
Honeysuckle	<i>Lonicera periclymenum</i>	Excellent food source for invertebrates including the Speckled Wood butterfly. Berries eaten by
Wild clematis/ Old man's beard	<i>Clematis vitalba</i>	Provides nectar for bees and butterflies.
Plants to site under trees or in shady areas		
Bluebell	<i>Hyacinthoides non-scripta</i>	

Bugle	<i>Ajuga reptans</i>	
Daffodils	<i>Narcissus pseudonarcissus</i>	
Foxglove	<i>Digitalis purpurea</i>	
Common Name	Scientific name	Wildlife value
Lily of the valley	<i>Convallaria majalis</i>	
Lords-and-ladies	<i>Arum maculatum</i>	
Primrose	<i>Primula vulgaris</i>	
Sweet violet	<i>Viola odoratum</i>	
Wood avens	<i>Geum urbanum</i>	
Yellow archangel	<i>Lamstrum galeobdolon</i>	
Other shrubs for nectar, pollen or fruits		
Bodnant viburnum	<i>Viburnum bodnantense</i> x	Provides early nectar source for invertebrates and berries for birds. One of the most valuable winter
Californian lilac	<i>Ceanothus spp.</i>	Nectar for bees and butterflies.
Creeping cotoneaster	<i>Cotoneaster frigidus</i>	Berries good for birds and small mammals. Attracts waxwings and pheasants.
Firethorn	<i>Pyracantha spp.</i>	Good for nesting thrushes and a site or an open robin box. Nectar for bees, berries for birds.
Himalayan honeysuckle	<i>Leycesteria formosa</i>	Provides nectar for bees and butterflies.
Japanese quince	<i>Chaenomeles japonica</i>	Berries for birds and mammals.
Lilac	<i>Syringa vulgaris</i>	Nectar for bees and butterflies.
Mahonia	<i>Mahonia spp.</i>	Nectar for bees and butterflies.
Mock orange	<i>Philadelphus spp.</i>	Nectar for bees and butterflies.
Serviceberry	<i>Amelanchier canadensis</i>	Provides nectar for bees and butterflies.
Wildflowers		
Agrimony	<i>Agrimonia eupatoria</i>	Provides nectar for bees and butterflies.
Chicory	<i>Chicorium intybus</i>	Provides nectar for bees and butterflies.
Chives	<i>Allium schoenoprasum</i>	Provides nectar for bees and butterflies.
Common mallow	<i>Malva sylvestris</i>	Provides nectar for bees and butterflies.
Common poppy	<i>Papaver rhoeas</i>	Provides nectar for bees and butterflies.
Corncockle	<i>Agrostemma githago</i>	Very good nectar source for bees and butterflies.

Corn marigold	<i>Chrysanthemum segetum</i>	Very good nectar source for bees and butterflies.
Cowslip	<i>Primula veris</i>	Very good nectar source for bees and butterflies.
Dame's violet	<i>Hesperis matronalis</i>	Very good nectar source for bees and butterflies.
Dandelion	<i>Taraxacum officinale</i>	Very good nectar source for bees and butterflies.
Devil's bit scabious	<i>Succisa pratensis</i>	Very good nectar source for bees and butterflies.
Field scabious	<i>Knautia arvensis</i>	Very good nectar source for bees and butterflies.
Common Name	Scientific name	Wildlife value
Foxglove	<i>Digitalis purpurea</i>	Very good nectar source for bees and butterflies.
Germander speedwell	<i>Veronica chamaedrys</i>	Very good nectar source for bees and butterflies.
Goldenrod	<i>Solidago virgaurea</i>	27 species of lepidoptera.
Great mullein	<i>Verbascum thapsus</i>	Very good nectar source for bees and butterflies.
Greater knapweed	<i>Centaurea scabiosa</i>	Very good nectar source for bees and butterflies.
Harebell	<i>Campanula rotundifolia</i>	Very good nectar source for bees and butterflies.
Herb-robert	<i>Geranium verum</i>	Very good nectar source for bees and butterflies.
Lady's bedstraw	<i>Galium verum</i>	Very good nectar source for bees and butterflies.
Marjoram	<i>Origanum vulgare</i>	Good plant for butterflies and bees
Meadow cranesbill	<i>Geranium pratense</i>	Very good nectar source for bees and butterflies.
Oxeye daisy	<i>Leucanthemum vulgare</i>	Very good nectar source for bees and butterflies.
Primrose	<i>Primula vulgaris</i>	Very good nectar source for bees and butterflies.
Red campion	<i>Silene dioica</i>	Very good nectar source for bees and butterflies.
Spiked speedwell	<i>Veronica spicata</i>	Very good nectar source for bees and butterflies.
Tansy	<i>Tanacetum vulgare</i>	Very good nectar source for bees and butterflies.
Teasel	<i>Dipsacus fullonum</i>	A food source of the Brimstone butterfly. Attracts other insects for its nectar and birds for its seeds.
Toadflax	<i>Linaria vulgaris</i>	Very good nectar source for bees and butterflies.
White campion	<i>Silene alba</i>	Very good nectar source for bees and butterflies.
Wild thyme	<i>Thymus drucei</i>	Very good nectar source for bees and butterflies.
Yellow loosestrife	<i>Lysimachia vulgaris</i>	Provides nectar for bees and butterflies.

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